MHC-F50/F100/FR1

SERVICE MANUAL

US Model
Canadian Model
MHC-F50/F100
AEP Model
UK Model
E Model
Australian Model
MHC-FR1

- MHC-F50/F100/FR1 are composed following models.
  As for the service manual, it is issued for each component model, then, please refer to it.

COMPONENTS MODEL NAME FOR MHC-F50/F100/FR1

	MHC-F50	MHC-F100	MHC-FR1
COMPACT DISC DECK RECEIVER SYSTEM	HCD-F50	HCD-F100	HCD-FR1
SPEAKER SYSTEM	SS-F50	SS-F100	

SPECIFICATIONS

General

Power requirements

120 V AC, 60 Hz (US, CND)
220-230 V AC, 50/60 Hz (AEP, UK, G)
220-240 V AC, 50/60 Hz (AUS)
110-120 V or 220-240 V AC, 50/60 Hz
Adjustable with the voltage selector
(OTHER models)

Power consumption

110 W (MHC-F50: US)
120 W (MHC-F50. CND)
160 W (MHC-FR1: AEP, UK, G)
195 W (MHC-F100)
210 W (OTHER models)

- Abbreviation
  CND : Canadian model
  G : German model
  AUS : Australian model

Supplied accessories

AM loop aerial (1)
Remote RM-SF50 (1) (MHC-F50)
Remote RM-SF100 (1) (MHC-F100/FR1)
Sony SUM-3 (NS) batteries (2)
FM lead aerial (1)
Speaker cords (2)

Design and specifications are subject to change without notice

COMPACT Hi-Fi STEREO SYSTEM

MICROFILM

996094811

SONY

PARTS LIST

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service Some delay should be anticipated when ordering these items.

- Abbreviation
  CND · Canadian model
  G · German model
  SP Singapore model
  AUS · Australian model

Ref. No.	Part No.	Description	Remark
	1-501-374-11	ANTENNA, LOOP	
	1-501-659-11	ANTENNA (FM) (EXCEPT AEP, UK, G)	
	1-501-807-11	ANTENNA, (FM) (AEP, UK, G)	
	1-769-306-11	CORD, SPEAKER (SS) (2 m)	
	3-860-078-11	MANUAL, INSTRUCTION (ENGLISH)	(EXCEPT AEP, UK, G)
	3-860-078-21	MANUAL, INSTRUCTION (FRENCH) (CND)	
	3-860-078-31	MANUAL, INSTRUCTION (FRENCH, SPANISH)	(E, SP)
	3-860-078-41	MANUAL, INSTRUCTION (CHINESE) (SP)	
	3-860-079-11	MANUAL, INSTRUCTION (ENGLISH) (AEP, UK)	
	3-860-079-21	MANUAL, INSTRUCTION (FRENCH, SPANISH, PORTUGUESE) (AEP)	
	3-860-079-31	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP)	
	3-860-079-41	MANUAL, INSTRUCTION (GERMAN) (AEP, G)	
	4-979-371-01	COVER, BATTERY (for RM-SF50/SF100)	
	8-917-583-90	REMOTE COMMANDER (RM-SF50) (MHC-F50)	
	8-917-584-90	REMOTE COMMANDER (RM-SF100)	(EXCEPT MHC-F50)

9-960-948-11

Sony Corporation
Home A&V Products Company

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HCD-F50/F100/FR1

SERVICE MANUAL

Ver. 1.1 2005.02

US Model
Canadian Model
HCD-F50/F100
AEP Model
UK Model
E Model
Australian Model
HCD-FR1

Photo: HCD-FR1

HCD-F50/F100/FR1 is the tuner, deck, CD and amplifier section in MHC-F50/F100/FR1.

* Dolby noise reduction manufacrured under license from Dolby Laboratories Licensing corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM-46B1 (F100/FR1) CDM-46B2 (F50)
Tape deck Section	Optical Pick-up Name	KSS-213B/S-N
	Model Name Using Similar Mechanism	HCD-D690/XB6
	Tape Transport Mechanism Type	TCM-220WR2

SPECIFICATIONS

For the US model
AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8 ohm loads, both channels driven, from 70-20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.9% total harmonic distortion from 250 milliwatts to rated output.

Amplifier section
Continuous RMS power output
Canadian model
100+100 watts
(8 ohms at 1 kHz, 5% THD) (F100)
60+60 watts
(6 ohms at 1 kHz, 5% THD) (F50)
Other models 100+100 watts
(8 ohm at 1 kHz, 10% THD)
Peak music power output (EXCEPT US, Canadian) :
1400 watts

Inputs
VIDEO/MD IN (phono jacks) : voltage 250 mV,impedance 47 kilohms
MIX MIC (phone jack) (Singapore model): sensitivity 1 mV, impedance 10 kilohms

Outputs
VIDEO/MD OUT (phono jacks) : voltage 250 mV impedance 1 kilohms
PHONES (stereo phone jack) : accepts headphones of 8 ohms or more.
SPEAKER : accepts impedance of 8 to 16 ohms (F100/FR1)
accepts impedance of 6 to 16 ohms (F50)
SURROUND SPEAKER (F100/FR1):
accepts impedance of 16 ohms.
SUPER WOOFER (F100/FR1):
Voltage 1 V, impedance 1 kilo ohm

CD player section
System: Compact disc and digital audio system
Laser: Semiconductor laser (λ=780nm)
Emission duration: continuous
Laser output: Max. 44.6 μW*
*This output is the value measured at a distance of 200 mm from the objective lens surface -on the Optical Pick-up Block with 7 mm aperture.
Wavelength: 780-790 nm
CD OPTICAL DIGITAL OUT
(Square optical connector jack, rear panel)
Wavelength: 600 nm

– Continued on next page –

MINI HI-FI COMPONENT SYSTEM

9-960-949-12
2005B05-1
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Sony Corporation
Audio Group
Published by Sony Engineering Corporation

SONY®

Tape player section

Recording system 4-track 2-channel stereo
Frequency response 60 - 13,000 Hz (±3 dB), using Sony TYPE I cassette
(DOLBY NR OFF) 60 - 14,000 Hz (±3 dB), using Sony TYPE II cassette

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 - 108,0 MHz
Antenna terminals 75 ohm unbalanced
Intermediate frequency 10.7 MHz

AM tuner section

Tuning range
North American model:
530 - 1,710 kHz
(with the AM tuning interval set at 10kHz)
531 - 1,710 kHz
(with the AM tuning interval set at 9 kHz)
Singaporian model: MW 531 - 1,602 kHz
(with the MW tuning interval set at 9 kHz)
530 - 1,710 kHz
(with the MW tuning interval set at 10 kHz)
SW 5.95 - 17.90 MHz
(with the SW tuning interval set at 5 kHz)
Other models:
531 - 1,602 kHz
(with the AM tuning interval set at 9 kHz)
530 - 1,710 kHz
(with the AM tuning interval set at 10 kHz)
Intermediate frequency 450 kHz
Antenna AM loop antenna
External antenna terminal

General

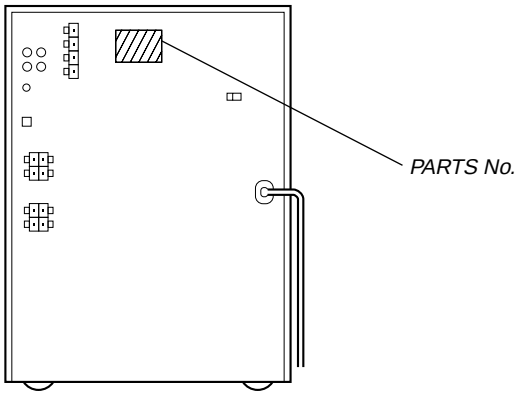
Power requirements
North American model: 120 V AC, 60 Hz
Australian model: 220 - 240 V AC, 50/60 Hz
AEP, UK, G models: 220 - 230V AC, 50/60 Hz
Other models: 110 - 120 V or 220 - 240 V AC,
50/60 Hz Adjustable with voltage selector
Power consumption
U.S. model: 195 watts (HCD-F100)
110 watts (HCD-F50)
Canadian model: 195 watts (HCD-F100)
120 watts (HCD-F50)
Other models: 210 watts
Dimensions (w/h/d) Approx. 280×375×450 mm
Mass Approx. 11.5 kg (HCD-F100/FR1)
Approx. 10 kg (HCD-F50)

Supplied accessories: AM loop antena (1)
Remote RM-SF100 (1) (F100/FR1)
Remote RM-SF50 (1) (F50)
Sony SUM-3 (N5)
batteries (2)
FM lead antenna (1)
Speaker coreds (2)

Design and specifications are subject to change without notice.

MEDEL IDENTIFICATION

– BACK PANEL –



MODEL	PARTS NO.
F50 : US model	4-990-400-0☐
F50 : Canadeian model	4-990-400-1☐
F100 : US model	4-990-364-0☐
F100 : Canadian model	4-990-364-1☐
FR1 : AEP, UK, German model	4-990-364-2☐
FR1 : E model	4-990-364-5☐
FR1 : Australian model	4-990-364-6☐
FR1 : Singapore model	4-990-364-9☐

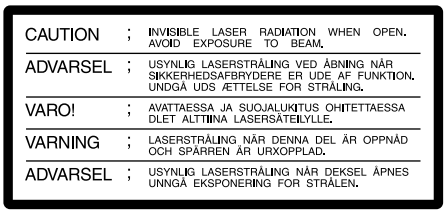
CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

The following caution label is located inside the unit.


CAUTION ; INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL ; USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDS ÆTTELSE FOR STRÅLING.
VARO! ; AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE.
VARNING ; LASERSTRÅLING NÄR DENNA DEL ÄR OPPNÅD OCH SPÄRREN ÄR URXOPPLAD.
ADVARSEL ; USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

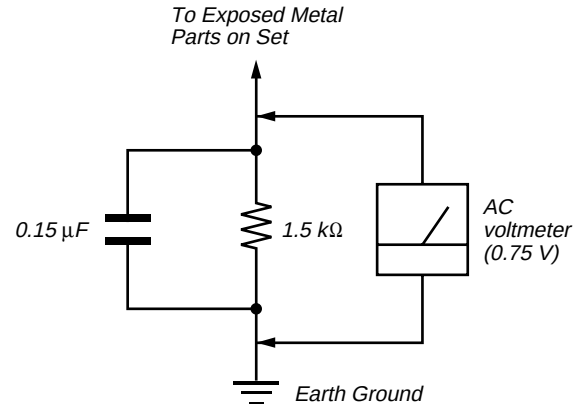


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in “CD section adjustment” and check that the S curve waveform is output repeatedly.

Notes on chip component replacement

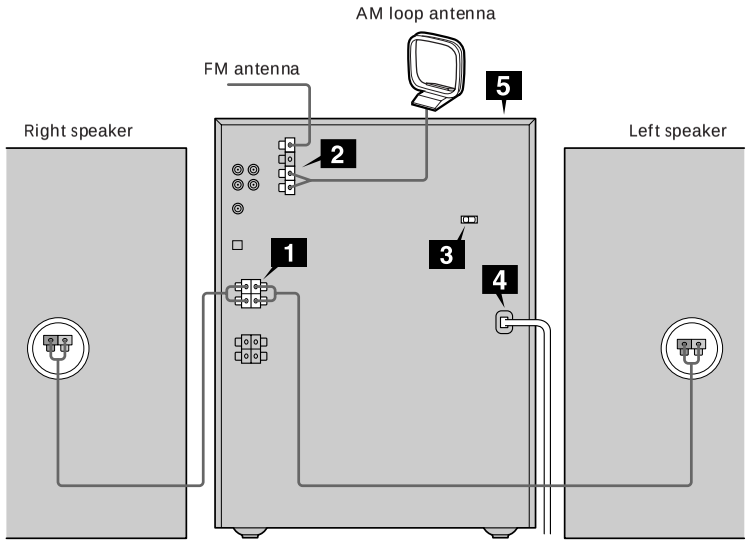
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Step 1: Hooking up the system

Do the following procedure 1 to 5 to hook up your system using the supplied cords and accessories. To complete the setup, do steps 2 and 3 also.

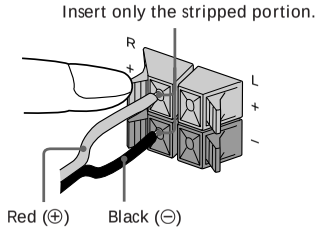


MHC-FR1 is used for illustration purpose.

1 Connect the speakers.

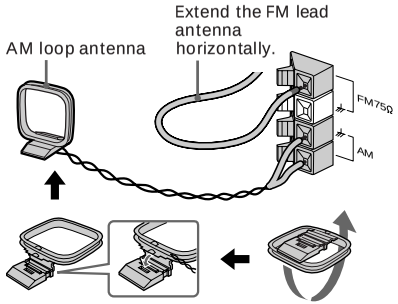
Connect the speaker cords to the SPEAKER jacks of the same color.

Keep the speaker cords away from the antennas to prevent noise.

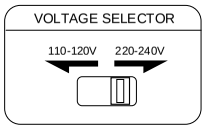


2 Connect the FM / AM antennas.

Set up the AM loop antenna, then connect it.



3 Set VOLTAGE SELECTOR to position of your local power line voltage (except for North American, and Australian models).



4 Connect the power cord to a wall outlet.

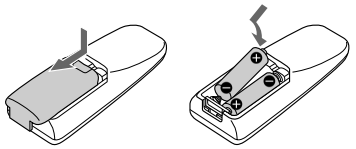
Demo mode appears in the display.

If the plug on this unit does not fit your wall outlet, detach the supplied adapter from the plug (only for Singapore).

5 Deactivate the demo mode by pressing DISPLAY / DEMO when the system power is turned off.

The demo mode is also deactivated when you set the time.

Inserting two size AA (R6) batteries into the remote



Tip

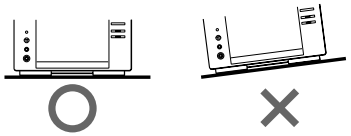
With normal use, the batteries should last for about six months. When the remote no longer operates the system, replace both batteries with new ones.

Note

If you do not use the remote for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Note on placement

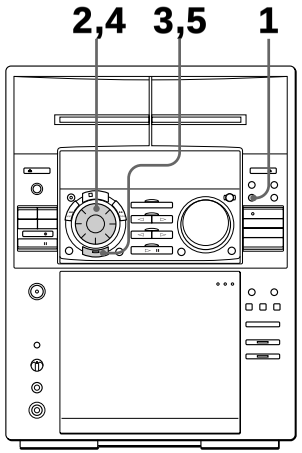
Be sure to place this system on a horizontal place. If the system is slanted, it may cause malfunction or damage the system.



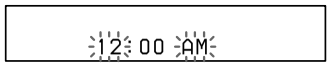
This section is extracted from instruction manual.

Step 2: Setting the time

You must set the time before using the timer functions.



1 Press ◴/CLOCK SET.
The hour indication flashes.



2 Turn the jog dial to set the hour.
The clock is on a 12-hour system.

3 Press ENTER.
The minute indication flashes.

4 Turn the jog dial to set the minute.

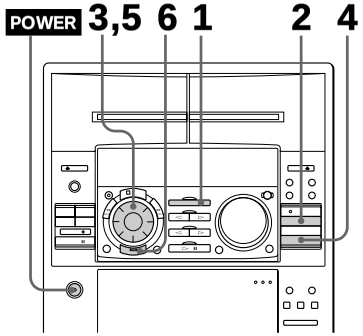
5 Press ENTER.
The clock starts working.

Tips

- If you've made a mistake, start over from step 1.
- Setting the time deactivates the demo mode . If you want to display the demo mode, press DISPLAY/DEMO when the power is off.

Step 3: Presetting radio stations

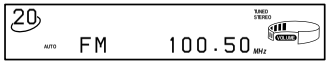
For Singaporian model, you can preset up to 40 stations, 20 for FM, 10 for MW and 10 for SW. For North and South American and Australian models, you can preset up to 30 stations, 20 for FM and 10 for AM.



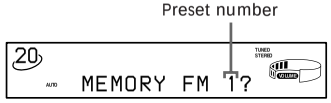
1 Press TUNER/BAND repeatedly until the band you want appears in the display.
Every time you press this button, the band changes as follows:
Singaporian models:
FM → MW → SW
North and South American and Australian models:
FM ⟷ AM

2 Press TUNING MODE repeatedly until "AUTO" appears.

3 Turn the jog dial.
The frequency indication changes and scanning stops when the system tunes in a station. "TUNED" and "STEREO" (for a FM stereo program) appear.



4 Press TUNER MEMORY.
A preset number appears in the display.



5 Turn the jog dial to select the desired preset number.

6 Press ENTER.
The station is stored.

7 Repeat steps 1 to 6 to store other stations.

To tune in a station with a weak signal

Press TUNING MODE repeatedly until "MANUAL" appears in step 2, then turn the jog dial to tune in the station.

To change the preset number

Start over from step 1.

To change the AM tuning interval

The AM tuning interval is factory-preset to 10 kHz (9 kHz in some areas). To change the AM tuning interval, tune in any AM station first, then turn off the power. While holding down the ENTER button, turn the power back on. When you change the interval, AM preset stations will be erased. To reset the interval, repeat the same procedure.

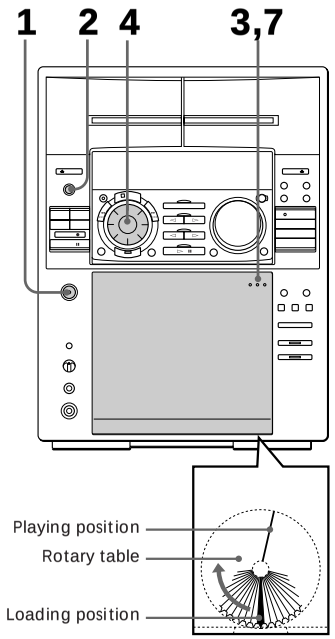
Tip

The preset stations are retained for half a day even if you unplug the power cord or if a power failure occurs.

Inserting CDs

You can insert up to 51 discs into this player.

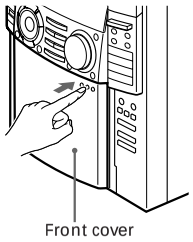
We recommend you use the PLUS ONE slot for CDs you will be inserting and removing frequently (see page 25).



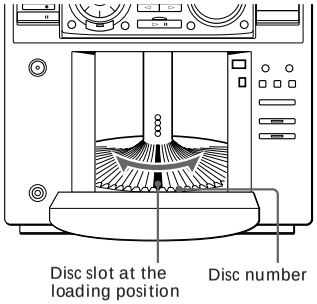
1 Press POWER to turn on the player.

2 Press FUNCTION repeatedly until "CD" appears.

3 Open the front cover by pushing the right edge of the cover.



4 Turn the jog dial until you find the disc slot where you want to insert a disc, while checking the disc number (written beside every slot and also indicated in the display).



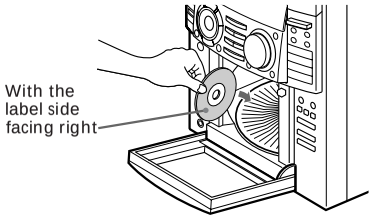
The disc number* or disc title (for MHC-F100/MHC-FR1 only, see page 26 for details) at the loading position appears in the display. As you turn the jog dial, the disc number or the disc title changes.

* If you have already inserted discs, the disc number at the playing position appears. When you turn the jog dial, the displayed disc number changes to the one at the loading position.

5 Insert a disc with the label side facing right.

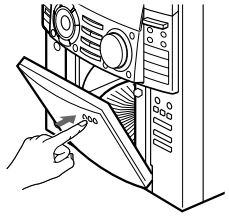
Notes

- Make sure you have inserted the disc into each slot at a right angle to the rotary table. If the disc is not put in straight, it may damage the player or the disc.
- Make sure the rotary table comes to a complete stop before inserting or removing discs.



6 Repeat steps 4 and 5 to insert more discs.

7 Close the front cover by pushing the right edge of the cover until it clicks.



The rotary table turns and the disc slot at the loading position is set to the playing position.

Always close the front cover except when you insert or remove discs.

Removing CDs

After following Steps 1 to 3 of "Inserting CDs" on page 8, remove the discs. Then close the front cover.

Notes

- Do not insert an empty 8 cm (3-inch) CD adaptor. It may damage the player.
- Do not attach anything such as seals or sleeves to CDs. It may damage the player or the disc.
- If you drop a disc into the player and the CD won't go into the slot correctly, consult your nearest Sony dealer.
- When transporting the player, remove all discs from the player.
- If you want to remove the disc played, press ENTER after opening the front cover. The disc comes to the loading position. Remove the disc after the rotary table comes to a complete stop.

Tips

- To play the disc you want independently, see "Playing your favorite disc independently" on page 25.
- You can display the original disc titles instead of the disc numbers to locate it easily when you start playing.
  When you select a CD-TEXT disc, the disc title is displayed instead of the disc number (for MHC-F100/MHC-FR1 only, see page 26 for details).

Connecting optional AV components

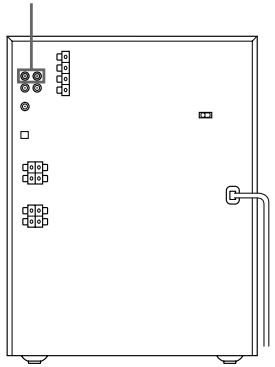
To enhance your system, you can connect optional components. Refer to the instructions of each component.

MHC-FR1 is used for illustration purpose.

Connecting a VCR

Make sure to match the color of the plugs and the connectors. To listen to the sound of the connected VCR, press FUNCTION repeatedly until “VIDEO” appears.

To the audio output of the VCR



Note

If the sound is distorted when selecting “VIDEO”, switch to “MD” (see “Before connecting an MD deck” on this page).

Connecting audio components

Select one of the following two connections, depending on the equipment to be connected and method of connecting.

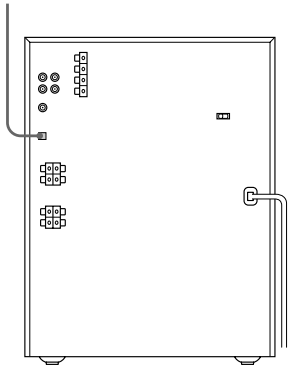
Before connecting an MD deck

Press FUNCTION repeatedly until “MD” appears on the display.
When the power is off, press POWER while holding down GROOVE.
“VIDEO” on the display will switch to “MD”.
To return to “VIDEO”, repeat the same step.

Connecting an MD deck for digital recording (For MHC-F100/MHC-FR1 only)

You can record from CD into the MD deck digitally by connecting an optical cable.

To the DIGITAL IN jack of the MD deck

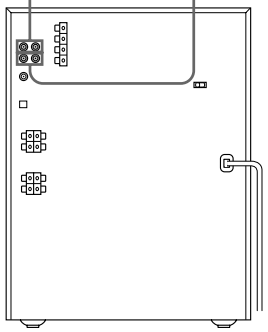


Connecting an MD deck for analog recording

Make sure to match the color of the plugs and the connectors. To listen to the sound of the connected MD deck, press FUNCTION repeatedly until “MD” appears.

To the audio output of the MD deck

To the audio input of the MD deck

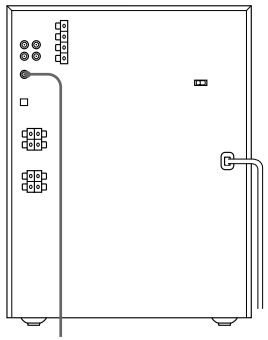


Tip

If you connect a turntable with MM cartridge, connect it to VIDEO / MD IN using the optional MM cartridge equalizer and an audio connecting cord. To listen to the sound, press FUNCTION repeatedly until “VIDEO” appears.

Connecting a super woofer speaker (For MHC-F100/MHC-FR1 only)

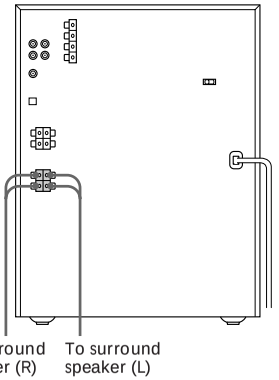
You can connect an optional super woofer speaker.



To super woofer

Connecting surround speakers (For MHC-F100/MHC-FR1 only)

You can connect an optional surround speakers.



To surround speaker (R)

To surround speaker (L)

Note

You need to connect both left and right surround speakers. Otherwise, the sound will not be heard.

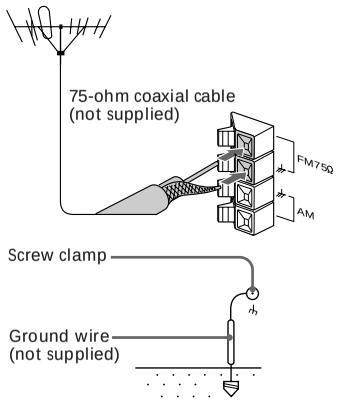
continued

Connecting outdoor antennas

Connect the outdoor antenna to improve the reception.

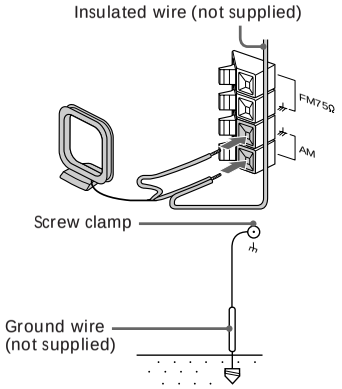
FM antenna

Connect the optional FM outdoor antenna. You can also use the TV antenna instead.



AM antenna

Connect a 6- to 15- meter (20- to 50- feet) insulated wire to the AM antenna terminal. Leave the supplied AM loop antenna connected.



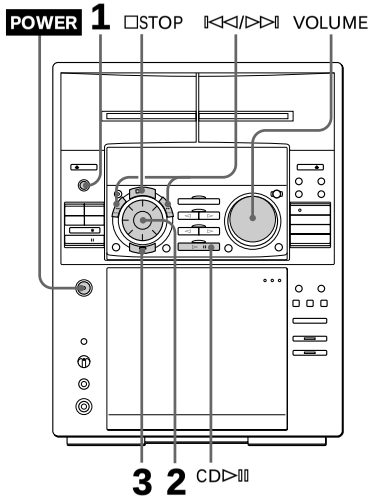
Important

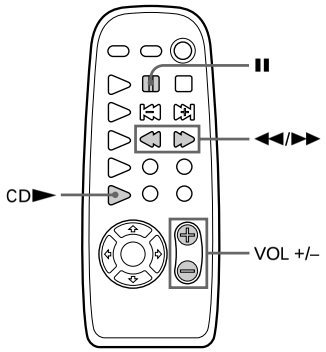
If you connect an outdoor antenna, ground from ⏚ terminal with the screw clamp. To prevent a gas explosion, do not connect the ground wire to a gas pipe.

Playing a CD

— Normal play

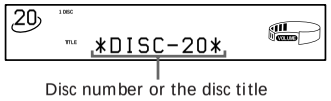
You can play up to 51 CDs in a row.





1 Press FUNCTION repeatedly until "CD" appears.

2 Turn the jog dial until the desired disc number or the disc title* appears.



3 Press ENTER or CD ▷II (or CD ► on the remote)

The selected disc is set to the playing position, and starts playing.

* For MHC-F100 / MHC-FR1 only, see page 26 for details.

continued

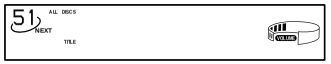
Ver. 1.1

Playing a CD (continued)

To	You need to
Stop play	Press ☐ STOP.
Pause	Press CD ▷II (❚❚ on the remote).
Resume playing after pause	Press CD ▷II (❚❚ on the remote).
Select a CD	Turn the jog dial clockwise (or press ➡ on the remote) or counterclockwise (or press ⬅ on the remote) and release it when you reach the desired CD.
Select a track	During play or pause, press ▷▷I (to go forward) or I◁◁ (to go back) until you reach the desired track.
Advance or return 10 CDs at a time	Press ⬆ on the remote (to move 10 CDs ahead) or ⬇ (to move 10 CDs back).
Find a point of a track	Press and hold down ►► (to go forward) or ◄◄ (to go back) on the remote during a play and release it at the desired point.
Play only the CD you have selected	Press CONTINUE repeatedly until "1 DISC" appears.
Play all CDs	Press CONTINUE repeatedly until "ALL DISCS" appears.
Adjust the volume	Turn VOLUME (or press VOL +/– on the remote).
Stop playing and remove the disc	Open the front cover, then press ENTER. The PLUS ONE slot comes out automatically when the front cover is opened while the CD PLUS ONE button is lit up.

To specify the next CD to play

While playing a disc, turn the jog dial until the desired disc number (or disc title) and "NEXT" appears. To skip to the next disc right away, press ENTER.



To cancel the specified disc, press CONTINUE twice so that "NEXT" disappears.

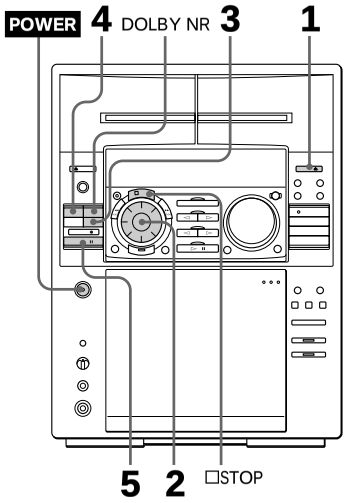
Tips

- Pressing CD ▷II when the power is off automatically turns the power on and starts CD playback if there is a CD in the tray (One Touch Play).
- You can switch from another source to the CD player and start playing a CD just by pressing CD ▷II (Automatic Source Selection).
- If there is no CD in the player, "–NO DISC–" appears.

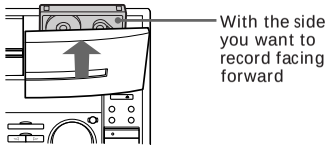
Recording a CD

— CD Synchro Recording

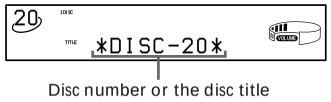
The CD SYNCHRO button lets you record from a CD to a tape easily. You can use TYPE I (normal) or TYPE II (CrO_2) tapes. The recording level is adjusted automatically.



1 Press ⏏ EJECT and insert a blank tape into deck B.



2 Turn the jog dial until the desired disc number or the disc title (see page 26) appears.



Disc number or the disc title

3 Press CD SYNCHRO.
Deck B stands by for recording and the CD player stands by for playback. ▷ (for front side) lights up.

4 Press DIRECTION repeatedly to select ⇄ to record on one side. Select ↻ (or RELAY) to record on both sides.

5 Press PAUSE II.
Recording starts.

To stop recording

Press ☐ STOP.

Tips

- If you want to record from the reverse side, press TAPE B ◁ so that ◁ (for reverse side) lights up.
- When you record on both sides, be sure to start from the front side. If you start from the reverse side, recording stops at the end of the reverse side.
- When you want to reduce the hiss noise in low-level high-frequency signals, press DOLBY NR so that "DOLBY NR B" appears after pressing CD SYNCHRO.

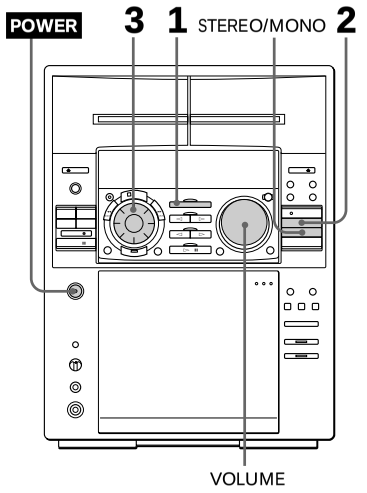
Note

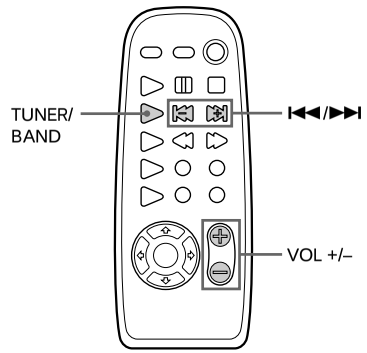
You cannot listen to other sources while recording.

Listening to the radio

— Preset Tuning

Preset radio stations in the tuner's memory first (see “Step 3: Presetting radio stations”).





1 Press TUNER/BAND repeatedly until the band you want appears.

Each time you press the button, the band changes as follows:

Singaporian model:

FM → MW → SW

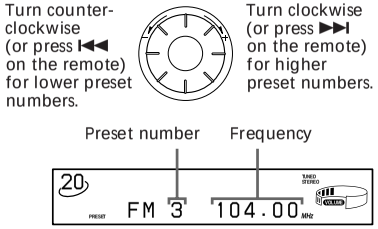
North and South American and Australian models:

FM ↔ AM

2 Press TUNING MODE repeatedly until “PRESET” appears.

MANUAL → AUTO → PRESET

3 Turn the jog dial (or press ⏮ or ⏭ on the remote) to tune in the desired preset station.


Turn counter-clockwise (or press ⏮ on the remote) for lower preset numbers.
Turn clockwise (or press ⏭ on the remote) for higher preset numbers.
Preset number
Frequency
20
FM 3
104.00

To	Do this
Turn off the radio	Press POWER.
Adjust the volume	Turn VOLUME (or press VOL +/– on the remote).

To listen to non-preset radio stations

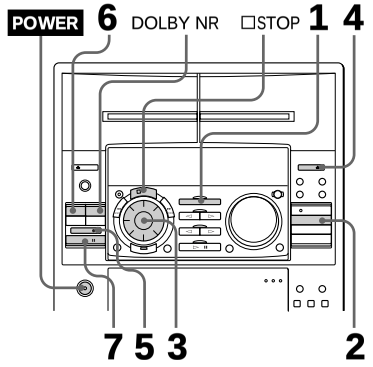
Press TUNING MODE repeatedly until “MANUAL” or “AUTO” appears in step 2, then tune in the station by turning the jog dial.

Tips

- Pressing TUNER/BAND when the power is off automatically turns the power on and tunes to the last received station (One Touch Play).
- You can switch from another source to the radio just by pressing TUNER/BAND (Automatic Source Selection).
- When an FM program is noisy, press STEREO/MONO repeatedly until “MONO” appears in the display. There will be no stereo effect, but the reception will improve. Press the button again to restore the stereo effect.
- To improve broadcast reception, reorient the supplied antennas.

Recording from the radio

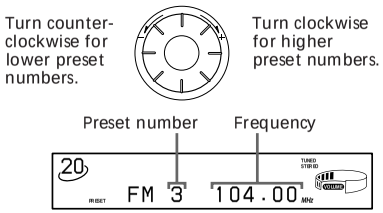
You can record the radio program on a tape by calling up a preset station. You can use TYPE I (normal) or TYPE II (CrO_2) tapes. The recording level is automatically adjusted.



1 Press TUNER/BAND repeatedly until the band you want appears.

2 Press TUNING MODE repeatedly until “PRESET” appears.

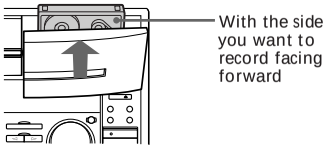
3 Turn the jog dial to tune in the desired preset station.



continued

Recording from the radio (continued)

4 Press ⏏ EJECT and insert a blank tape into deck B.



5 Press REC ○.
Deck B stands by for recording.

6 Press DIRECTION repeatedly to select ⇄ to record on one side. Select ⟲ (or RELAY) to record on both sides.

7 Press PAUSE ⏸.
Recording starts.

To stop recording

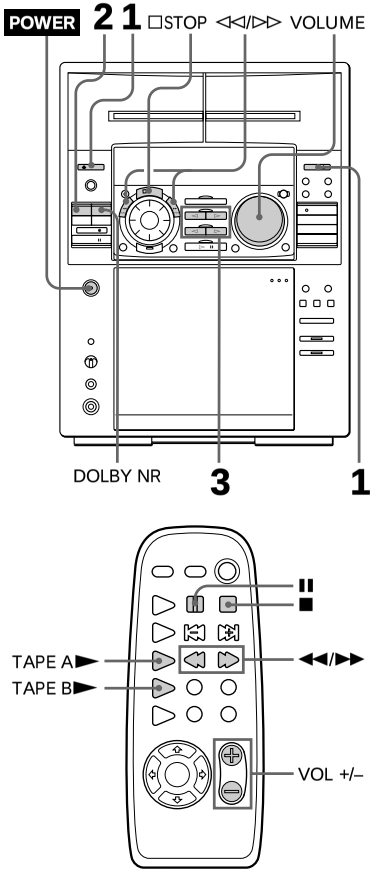
Press □ STOP.

Tips

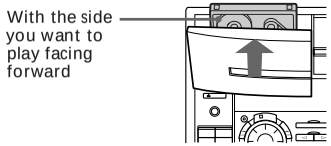
- If you want to record from the reverse side, press TAPE B ◁ so that ◁ (for reverse side) lights up.
- When you record on both sides, be sure to start from the front side. If you start from the reverse side, recording stops at the end of the reverse side.
- You can still rewind or fast-forward Deck B by pressing the ⏮ or ⏭ keys on the main unit, even while using the tuner.
- To record non-preset stations, select "MANUAL" in step 2, then turn the jog dial to tune in the desired station.
- When you want to reduce the hiss noise in low-level high-frequency signals, press DOLBY NR so that "DOLBY NR B" appears before step 7.
- If noise is heard while recording from the radio, move the respective antenna to reduce the noise.

Playing a tape

You can use any type of tape, TYPE I (normal), TYPE II (CrO_2) or TYPE IV (metal), since the deck automatically detects the tape type.



1 Press ⏏ EJECT and insert a recorded tape in deck A or B.



2 Press DIRECTION repeatedly to select ⇄ to play one side. Select ⟲* to play both sides.
To play both decks in succession, select RELAY (relay play).**

3 Press TAPE A ▷ or TAPE B ▷.
Press ◁ (or TAPE A ► or TAPE B ► on the remote again) to play the reverse side. The tape starts playing.

* The deck stops automatically after repeating the sequence five times.

** Relay play always follows the following sequence:
Deck A (front side), Deck A (reverse side), Deck B (front side), Deck B (reverse side).

To	Do this
Stop play	Press □ STOP (or ■ on the remote).
Pause (Deck B only)	Press PAUSE ⏸ (or ❚❚ on the remote). Press again to resume play.
Fast-forward	Press ⏭ while playing the front side or ⏮ while playing the reverse side. This fast-forwards the deck shown on the display (TAPE A or TAPE B).
Rewind	Press ⏮ while playing the front side or ⏭ while playing the reverse side. This rewinds the deck shown on the display (TAPE A or TAPE B).
Remove the cassette	Press ⏏ EJECT.
Adjust the volume	Turn VOLUME (or press VOL +/– on the remote).

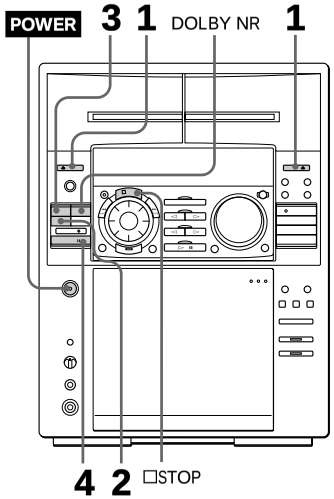
Tips

- Pressing TAPE A ◁/▷ or TAPE B ◁/▷ when the power is off automatically turns the power on and starts tape playback if there is a tape in the deck (One Touch Play).
- You can switch from another source to the tape deck just by pressing TAPE A ◁/▷ or TAPE B ◁/▷ (Automatic Source Selection).
- When you play a tape recorded with Dolby NR B, press DOLBY NR so that "DOLBY NR B" appears.

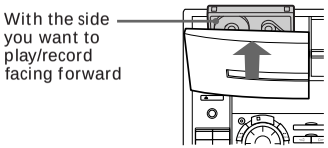
Recording from a tape

— High-speed Dubbing

You can use TYPE I (normal) or TYPE II (CrO_2) tapes. The recording level is automatically adjusted.



1 Press ⏏ EJECT and insert a recorded tape in deck A and a blank tape in deck B.



2 Press HI-SPEED DUBBING.
Deck B stands by for recording.

3 Press DIRECTION repeatedly to select ⇄ to record on one side. Select ⟲ (or RELAY) to record on both sides.

4 Press PAUSE ⏸.
Dubbing starts.

To stop dubbing

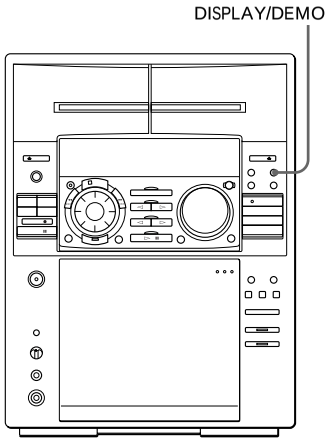
Press □ STOP.

Tips

- When you dub on both sides, start recording from the front side. If you record from the reverse side, recording stops at the end of the reverse side.
- If you set DIRECTION to ⟲ when the tapes you use have different lengths, the tape in each deck reverses independently. If you select RELAY, the tapes in both decks reverse together.
- When you record a tape recorded with Dolby NR B in deck A, press DOLBY NR so that "DOLBY NR B" disappears.
  The tape is recorded with Dolby NR B.

Using the CD display

You can check the remaining time of the current track or that of the CD.



➡ Press DISPLAY / DEMO.
Each time you press the button, the display changes as follows:

During the stop

→ disc number or disc title[1)]
↓
Artist name[2)]
↓
TOC display[3)]
↓
Clock display (for a few seconds)
↓
Effect (P FILE) name or "EFFECT ON (OFF)"

During the normal play

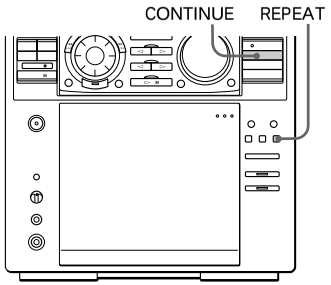
→ Playing time on the current track
↓
Track title[2)]
↓
Clock display (for a few seconds)
↓
Effect (P FILE) name or "EFFECT ON (OFF)"

[1)] For labeled CD or CD with CD-TEXT (For MHC-F100 / MHC-FR1 only)
[2)] CD with CD text (For MHC-F100 / MHC-FR1 only)
[3)] TOC = Table of Contents; displays current disc number, track number, playing time of the track.

Playing the CD tracks repeatedly

— Repeat Play

This function lets you repeat a single CD or all CDs in normal play, Shuffle Play and Program Play.



➡ Press REPEAT during play until "REPEAT" appears.

Repeat play starts. Do the following procedure.

To repeat	Press
All the tracks on the current CD	CONTINUE repeatedly until "1 DISC" appears.
All the tracks on all CDs	CONTINUE repeatedly until "ALL DISCS" appears.
Only one track	REPEAT repeatedly until "REPEAT 1" appears while playing the track you want to repeat.

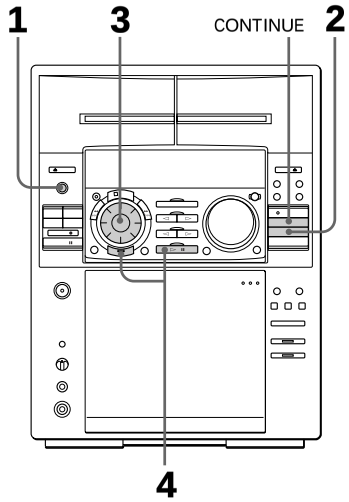
To cancel Repeat Play

Press REPEAT repeatedly until "REPEAT" or "REPEAT 1" disappears.

Playing the CD tracks in random order

— Shuffle Play

You can play all the tracks on one CD or all CDs in random order.



1 Press FUNCTION repeatedly until "CD" appears.

2 Press SHUFFLE to select ALL DISCS or 1 DISC Shuffle Play mode.

Each time you press SHUFFLE, "ALL DISCS" or "1 DISC" appears.

To play	Select
All tracks on all discs in random order	ALL DISCS
All tracks on the specific disc in random order	1 DISC

3 When you want to specify the disc for 1 DISC Shuffle Play, turn the jog dial until the desired disc number or disc title (see page 26) appears.

4 Press ENTER or CD ▷II.

"🔀" appears and then all the tracks play in random order.

To cancel Shuffle Play

Press CONTINUE.

Tips

- You can start Shuffle Play by pressing SHUFFLE while playing.
- You can specify the next disc to play during 1 DISC Shuffle Play.
  Turn the jog dial to specify the next disc. After all the tracks on the current disc are played in random order, the next disc starts playing. To skip to the next disc right away, press ENTER while playing the current disc.
  You cannot specify the next disc to play during ALL DISCS Shuffle Play.

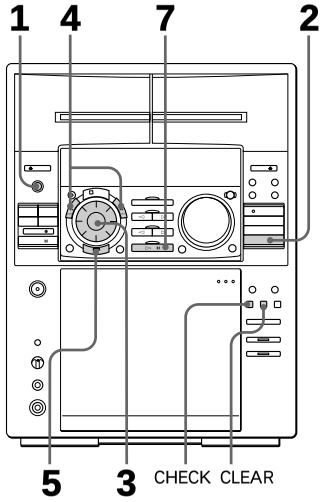
Note

Even if you press □STOP or turn off the power during ALL DISCS Shuffle Play, the player remembers which discs / tracks were played and which were not. Therefore, if you want to start ALL DISCS Shuffle Play again from the beginning, be sure to repeat the procedure from Step 1.

Programming the CD tracks

— Program Play

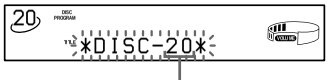
You can arrange the order of the tracks and / or discs to create three different programs and programs are stored automatically.
A program can contain up to 32 "steps" — one "step" may contain a track or a whole disc.



1 Press FUNCTION repeatedly until "CD" appears.

2 Press PROGRAM repeatedly until the desired program number (PROGRAM 1, 2 or 3) appears.

3 Turn the jog dial until the desired disc number appears.



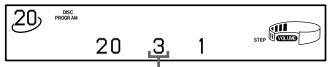
Disc number

continued

Programming the CD tracks (continued)

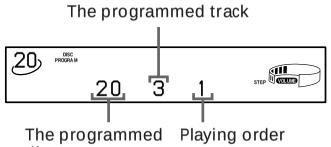
4 To program a whole disc, skip this step. Press ⏮/⏭ until the desired track number appears.

When the disc you select has a disc title (For MHC-F100/MHC-FR1 only), it appears and then switches to the following display.



5 Press ENTER.

The track is programmed.



6 To program other discs/tracks, do the following:

To program	Repeat Steps
Other discs	3 and 5
Other tracks on the same disc	4 and 5
Other tracks on other discs	3 to 5

7 Press CD ⏵⏸.

All the tracks play in the order you selected.

To cancel Program Play

Press CONTINUE.

To	You need to
Check the program	Press CHECK repeatedly. After the last track, "END" appears.
Clear a specific track or disc	Press CHECK until the track or disc you do not want appears, then press CLEAR.
Clear from the last track or disc	Press CLEAR. Each time you press the button, the last track or disc will be cleared.
Add tracks or discs to the end of the program	Follow the programming procedure.
Clear a specific program	1 Press PROGRAM repeatedly until the program number you want to clear appears. 2 Hold down CLEAR until "ALL CLEAR" appears.

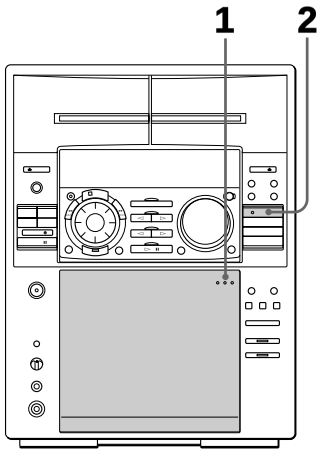
Tips

- When you press CD ⏵⏸, you can play the same program again.
- When you press PROGRAM during Continuous or Shuffle Play, the program will be played after the current track.
- If you replace discs, the programmed disc and track numbers remain until you erase them. So, the player plays only the existing disc and track numbers. However, the disc and track numbers that are not found in the player or on the disc are deleted from the program, and the rest of the program is played in the programmed order.

Playing your favorite CD independently

— Plus One Play

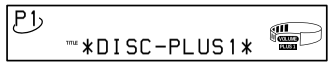
When you insert a disc into the PLUS ONE slot, you can play the disc independently from other discs. When using this function, the player is automatically set to 1 DISC Continuous Play mode.



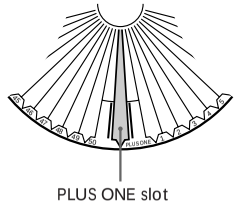
1 Open the front cover.

2 Press CD PLUS ONE (or PLUS ONE on the remote).

The indicator on the CD PLUS ONE button lights up.



The PLUS ONE slot comes to the loading position.

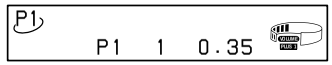


3 Insert a disc into the PLUS ONE slot.

4 Close the front cover.

The player starts playing the disc in the PLUS ONE slot.

When the disc you select has a disc title (For MHC-F100/MHC-FR1 only) this is displayed along with "PLUS1".



To cancel Plus One Play

Press CD PLUS ONE (or PLUS ONE on the remote). The indicator on the CD PLUS ONE button goes off. The disc number in the display changes to 51 and you can play the disc as the 51st disc.

continued

Playing Your Favorite CD Independently (continued)

Tips

- To play a disc already inserted into the PLUS ONE slot, press CD PLUS ONE while the front cover is closed.
- You can start Shuffle Play during Plus One Play by pressing SHUFFLE before step 4.

Notes

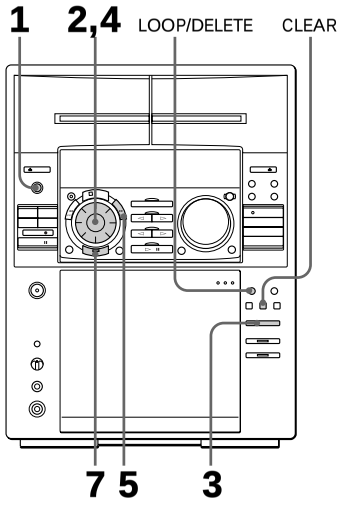
- Plus One Play will be canceled if;
  - — you turn the jog dial or press buttons to specify the other disc.
  - — you press PROGRAM, MEMO SCAN or MEMO SEARCH.
- The PLUS ONE slot comes to the loading position automatically if you open the front cover during Plus One Play. Do not put your hand inside the compartment nor change the disc before the rotary table comes to a complete stop. If you do, you may injure your hand or damage the disc.

Labeling a CD

(For MHC-F100/MHC-FR1 only)

— Disc Memo

You can label each disc using up to 12 characters. When you select a CD-TEXT disc, the first 12 characters of the disc title are stored as a disc memo. Whenever you load the labelled CD, the label (disc title) appears in the display.



1 Press FUNCTION repeatedly until “CD” appears.

2 Turn the jog dial until the disc number to which you want to label appears.

When you label a disc with the front cover closed, the disc number of the disc at the playing position appears.

When you label a disc with the front cover open, the disc number at the loading position appears.

3 Press MEMO INPUT.

The cursor (◄) starts flashing.

4 Turn the jog dial until the desired character appears.

The cursor disappears and the first space for the disc title flashes.

To select characters on the unit

As you turn the jog dial clockwise, the characters appear in the following order. Turn the jog dial counterclockwise to go back to the previous character.

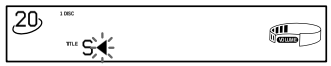
To select characters on the remote

Press ↑ or ↓ until the desired type of charecter appears, then press ← or → until the desired character appears.

(space) A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9 ! " # $ % & ' ( ) * + , – . / : ; < = > ? @ [\ ] ^ _ ` { ¦ } ~

5 Press ▷▷| to select the character.

The cursor shifts rightward and waits for the input of the next character.



If you have made a mistake

Press LOOP/DELETE. The character 1 space before the cursor disappears and the cursor flashes. Input the correct characters.

6 Repeat Steps 4 and 5 to input more characters.

7 Press ENTER to complete the labelling procedure.

The disc name lights up in the display.

Repeat Steps 2 to 7 to label other discs.

Note

- The disc title stores the number of the slot in which the CD was inserted. Rewrite the disc title when inserting a new CD into that slot.

To erase a disc name

1 Follow Steps 2 and 3 in “Labeling a CD” on page 26 to select the disc name you want to erase.

2 Press CLEAR.

The disc title disappears.

3 Press ENTER.

Erasing all titles of all discs

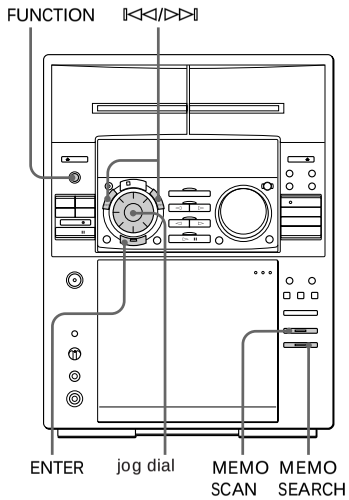
While holding down LOOP/DELETE, press CLEAR. “ALL ERASE” appears in the display, and all disc titles will be erased.

Tips

- When you replace a disc with a CD-TEXT disc, the disc title of the CD-TEXT disc is restored automatically.
  The disc title for the CD-TEXT disc is no longer stored when the CD is removed.
  Note that you cannot change the disc title of the CD-TEXT disc.
- You can label discs while the front cover is open.

Locating a specific CD

(for MHC-F100/MHC-FR1 only)



Locating a disc by scanning each disc title

— Memo Scan

You can locate a disc you want to play quickly by scanning the disc title (see page 26) in the display and start playing.

Note that you cannot use this function in the ALL DISCS Shuffle Play mode.

1 Press FUNCTION repeatedly until "CD" appears.

2 Press MEMO SCAN.
"MEMO SCAN" appears, and the lamp on the ENTER button flashes.
Disc titles will appear in order.

3 Press ENTER when the disc title of the disc you want to play appears.
The disc is set to the playing position, and the player starts playing.
In Program Play mode, the disc will be added to the end of the program.

Note

If "NO ENTRY" appears, no disc has been labeled. Try the Memo Scan function again after labeling the discs.

Locating a disc by searching a specific disc title

— Memo Search

You can search and locate a disc you want by inputting the first character used in the disc title (see page 26).

1 Press FUNCTION repeatedly until "CD" appears.

2 Press MEMO SEARCH.
"MEMO SEARCH" appears and the lamp on the ENTER button flashes.

3 Press ⏮ / ⏭ repeatedly to input the first character.

Each time you press ⏮ / ⏭, the characters appear in the following order.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9

If "[A] NOT FOUND" appears in the display while inputting the first character with the ⏮ / ⏭ buttons, no disc has been labeled using the input character.

Notes

- When searching input characters, blanks and symbols before the first character in the Disc Memo are ignored.
- When searching input characters, upper and lower cases cannot be differentiated.

4 Turn the jog dial to find the disc title you want.
As you turn the jog dial, the Disc Memos starting with the input character appear in the display.

5 Press ENTER to select the disc.
In Program Play mode, the disc will be added to the end of the program.

To locate a disc on the remote

Press the ← or → key on the remote until the disc title in step 4 that you want appears. Skip step 5.

To cancel Memo Search

Press MEMO SEARCH again.

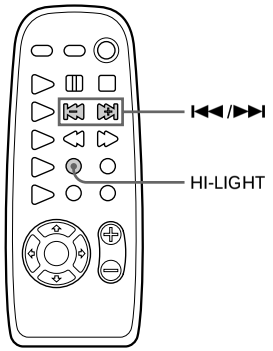
Tips

- If there is no more disc title starting with the input character in Step 4, the input character changes to the next one when you turn the jog dial.

Playing highlights of the CD

(for MHC-F100/MHC-FR1 only)

Some CD-TEXT discs have a feature to play only the highlights of the discs.



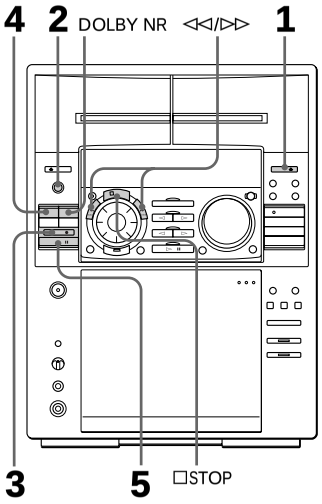
➡ Press HI-LIGHT on the remote in the stop mode.
The indicator on the ▷ button flashes while playing disc highlights.

Tips

- During play of disc highlights, you can return to normal play by pressing ▷ or ◁◁ / ▷▷ on the remote.
- During play of disc highlights, you can move to an earlier or later highlight song by pressing ⏮ / ⏭ on the remote.
- During play of disc highlights, you can use Repeat Play function.
  To repeat all the highlight songs, keep pressing REPEAT until "REPEAT" appears.
  To repeat only the current highlight song, keep pressing REPEAT until "REPEAT 1" appears.
- If you press HI-LIGHT while selecting discs without this feature, "NO HIGHLIGHT" appears in the display.

Recording on a tape manually

You can record from CD, tape, or radio as you like. For example, you can record just the songs you want or record from the middle of the tape. The recording level is adjusted automatically.



1 Insert a blank tape into deck B.

2 Press FUNCTION repeatedly until the source you want to record (e.g., CD) appears.

3 Press REC ○.
Deck B stands by for recording. ▻ (for front side) lights up.

4 Press DIRECTION repeatedly to select ⇄ to record on one side. Select ↻ (or RELAY) to record on both sides.

5 Press PAUSE ▯▯.
Recording starts.

6 Start playing the source to be recorded.

To	Press
Stop recording	□ STOP
Pause recording	PAUSE ▯▯

Tips

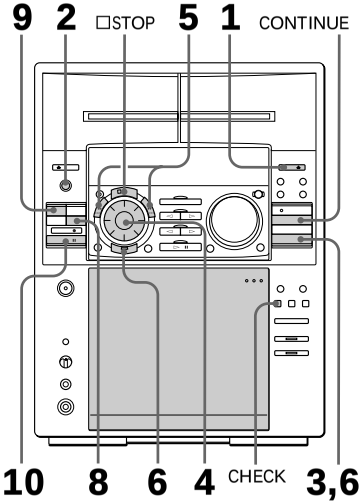
- If you want to record from the reverse side, press TAPE B ◅ so that ◅ (for reverse side) lights up.
- When you want to reduce the hiss noise in low-level high-frequency signals, press DOLBY NR so that "DOLBY NR B" appears before step 5.
- To skip tracks while recording from a tape, press ▷▷ or ◁◁. Deck B stands by for recording, and you can skip tracks. To resume dubbing, press ▯▯.

Note

- Pressing FUNCTION with "TAPE B" selected starts silent recording (blank recording).

Recording a CD by specifying track order

You can record tracks from all the CDs in the order you want. When programming, make sure the playing times for each side do not exceed the length of the tape.



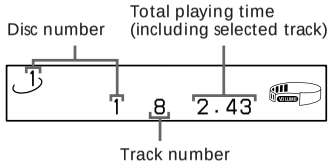
1 Insert a blank tape into deck B.

2 Press FUNCTION repeatedly until "CD" appears.

3 Press PROGRAM repeatedly until the program number (PROGRAM 1, 2 or 3) appears.

4 Turn the jog dial until the disc number you want appears.

5 To program a whole disc, skip this step.
Press ⏮◁◁ / ▷▷⏭ until the desired track appears in the display.



6 Press ENTER or PROGRAM.
The track is programmed.

To program	Repeat Steps
Other discs	4 and 6
Other tracks on the same disc	5 and 6
Other tracks on other discs	4 to 6

7 To program additional tracks to be recorded, repeat steps 4 to 6.
Skip step 4 to select tracks from the same disc.

8 Press CD SYNCHRO.
Deck B stands by for recording and the CD player stands by for playback. ▻ (for front side) lights up.

9 Press DIRECTION repeatedly to select ⇄ to record on one side. Select ↻ (or RELAY) to record on both sides.

10 Press PAUSE ▯▯.
Recording starts.

continued

Recording a CD by specifying track order (continued)

To stop recording

Press ☐ STOP.

To check the order

Press CHECK repeatedly. After the last track, “END” appears.

To cancel Program Edit

Press CONTINUE.

Tip

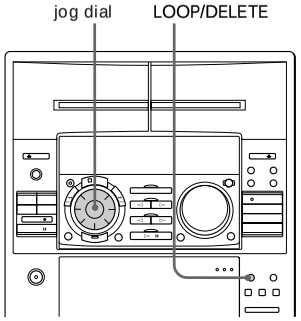
If the track cuts off during recording, because the tape ended while recording on the A side, the track will automatically be recorded from the beginning on the B side.

DJ Effects

Looping part of a CD

— Loop

With the loop function, you can repeat part of a CD during playback. This lets you create original recordings.



➡ Press and hold LOOP / DELETE during playback at the point you want to start the Loop function, and release to resume normal play.

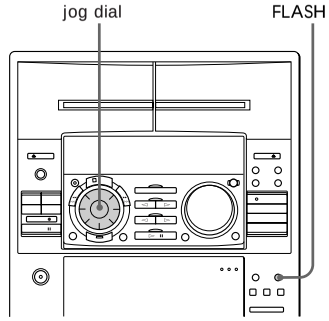
To adjust the loop length

Turn the jog dial while holding LOOP / DELETE (or press ← or → while holding LOOP / DELETE on the remote) to select different loop lengths (LOOP 1 – 20).

Flashing part of a CD

— Flash

With the flash function, you can “flash” the CD sound during playback. This lets you create original recordings.



➡ Press and hold FLASH during playback at the point you want to start the Flash function, and release to resume normal play.

To adjust the flash length

Turn the jog dial while holding FLASH to select different flash lengths (FLASH 1 – 20).

To adjust the flash length on the remote, press ← or → while holding FLASH. (For MHC-F50 only)

To use LOOP and FLASH together

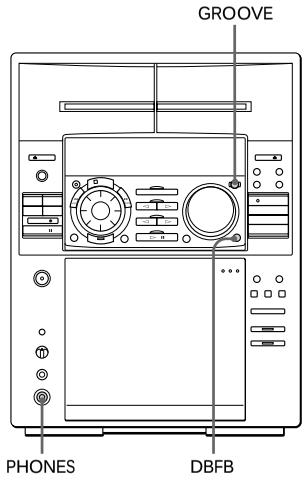
Press and hold both LOOP and FLASH at the same time.

Notes

- The loop and flash length cannot be adjusted during this operation. Adjust the loop and flash lengths independently beforehand if necessary.
- To record the flash effect, use the analog (VIDEO / MD OUT) connections or this unit's tape deck.

Adjusting the sound

You can reinforce the bass, create a more powerful sound, and listen with headphones.



To reinforce bass (DBFB)

Press DBFB*.

Each time you press the button, the display changes as follows:

DBFB ▁▂▃ → DBFB ▁▂▃▄▅ → display off

"DBFB ▁▂▃▄▅" is more effective than "DBFB ▁▂▃".

* DBFB = Dynamic Bass Feedback

For a powerful sound (GROOVE)

Press GROOVE. The volume switches to power mode, DBFB is automatically set to full strength, the equalizer curve changes, and the "GROOVE" button lights up. Press GROOVE again to return to the previous volume.

Notes

- With some songs, the music will sound distorted when you use the DBFB system with the graphic equalizer if the bass is too strong. Adjust the bass slowly while listening to music so that you can monitor the effect of the adjustment.
- Cancelling GROOVE sets DBFB to "DBFB ▁▂▃". and flattens the equalizer curve. To cancel the DBFB level, press DBFB until the indication disappears. Adjust the equalization to obtain the effect you desire.

To listen through the headphones

Connect the headphones to PHONES jack. No sound will come from the speakers.

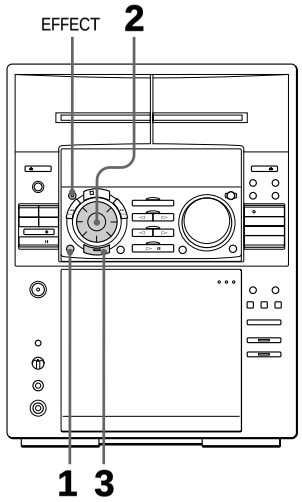
Note

If you have connected a super woofer, please note that sound comes from the super woofer even when the headphones are connected. Turn off the power of the super woofer when using headphones.
(Except for MHC-F50)

Selecting the audio emphasis

The audio emphasis menu lets you select the sound characteristic according to the sound you are listening to.

The personal file function (see "Making a personal audio emphasis file") lets you store your own effects.



1 Press GEQ FILE on the unit repeatedly until effect name appears.

2 Use the jog dial (or press GEQ FILE for MHC-F100/MHC-FR1 or GEQ FILE +/– for MHC-F50 on the remote) to select the desired music menu.

The preset name appears in the display. See the chart "Music menu options" on this page. The last effect chosen from that menu appears.

3 Press ENTER.

You don't need to press ENTER when you use the remote.

To cancel the effect

Press EFFECT repeatedly so that "EFFECT OFF" appears in the display.

Music menu options

"SUR ((((●)))) " appears if you select an effect with surround effects.

Effect	For
1 ROCK 2 POP 3 JAZZ 4 DANCE 5 SOUL	Standard music sources
6 ACTION 7 ROMANCE 8 SF 9 DRAMA 10 SPORTS	Soundtracks and special listening situations
11 SHOOTING 12 RACING 13 RPG 14 BATTLE 15 ADVENTURE	Video games
P FILE 1 – 5	Personal audio emphasis file (see page 38)

continued

Ver. 1.1

Selecting the audio emphasis (continued)

To change the equalizer display

Each time you press SPECTRUM ANALYZER, the equalizer display changes to show one of the three displays below.

Spectrum analyzer pattern 1

Spectrum analyzer pattern 2

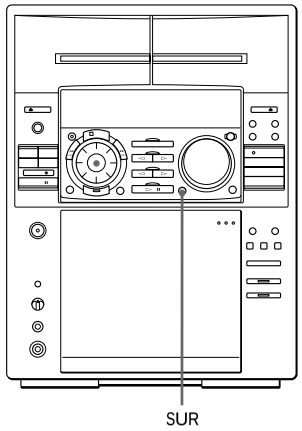
Graphic equalizer curve

Adjusting the audio emphasis

You can adjust the audio emphasis using the graphic equalizer and surround effect.

Activating the surround effect

You can enjoy the surround effect.



➡ Press SUR repeatedly so that "SUR ((((●)))) " appears in the display.

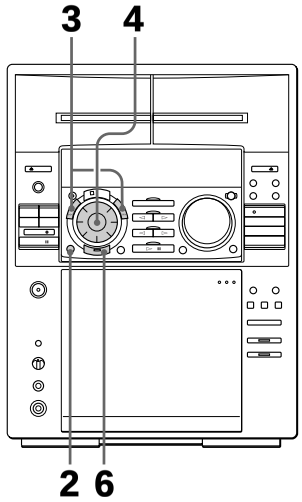
Note

When you choose other sound effects, the surround effects will be canceled. If you want to memorize the effect, store it into a personal file (see "Making a personal audio emphasis file").

Adjusting the graphic equalizer

You can adjust the sound by raising or lowering the levels of specific frequency ranges.

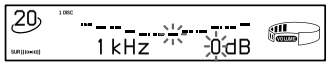
Before operation, first select the audio emphasis you want for your basic sound.



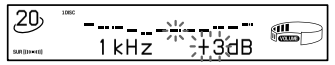
1 Select the audio emphasis you want for your basic sound (see "Selecting the audio emphasis").

2 Press GEQ FILE on the unit repeatedly until the graphic equalizer appears.

3 Press + / – repeatedly to select a frequency band.



4 Turn the jog dial to adjust level.



5 Repeat steps 3 and 4.

6 Press ENTER when finished.

Note

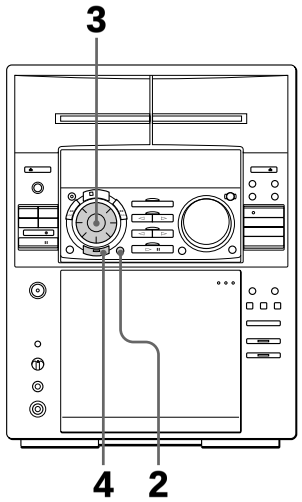
If you choose another menu audio emphasis (other than "EFFECT OFF") the adjusted sound effect is lost. To retain the adjusted sound effect for future use, store it in a personal file. (See "Making a personal audio emphasis file".)

Making a personal audio emphasis file

— Personal file

You can create a personal file of audio patterns (surround effect and graphic equalizer) and store them in the memory of the unit. Later call up an audio pattern to play a favorite tape, CD, or radio program. Create up to five audio files.

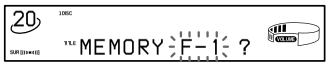
Before operation, first select the audio emphasis you want for your basic sound.



1 Obtain the sound effect you want by using the surround effect (page 36) and graphic equalizer (page 37).

2 Press GEQ MEMO.

The personal file number appears in the display.



3 Use the jog dial to select the file number (FILE 1 – 5) where you want to store the sound effect.

4 Press ENTER.

The adjusted sound effects are stored under the selected file number. The settings previously stored at this memory location are erased and replaced by the new settings.

To call up the personal file

1 Press GEQ FILE on the unit to display the last selected personal file.

2 Use the jog dial (or press GEQ FILE for MHC-F100 / MHC-FR1 or GEQ FILE +/– for MHC-F50 on the remote) to select the desired file number (FILE 1 – 5).

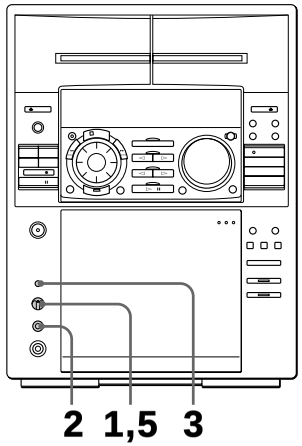
3 Press ENTER.

You don't need to press ENTER when you use the remote.

Singing along: Karaoke

(For Singaporian model only)

You can sing along with any stereo CD or tape by turning down the singer's voice. You need to connect an optional microphone.



1 Turn MIC LEVEL to 0 to turn down the microphone control level.

2 Connect an optional microphone to MIX MIC.

3 Press KARAOKE PON / MPX repeatedly to obtain the karaoke effect you desire.

Every time you press the button, the display changes as follows:

KARAOKE PON → MPX R → MPX L

↑ EFFECT (P FILE) name or "EFFECT ON (OFF)" ←

The 🎤 indicator appears in the display when a karaoke mode is activated.

To sing karaoke with decreasing the vocal level of a CD, select KARAOKE PON. To sing karaoke of multiplex CD or tape, select MPX R or MPX L.

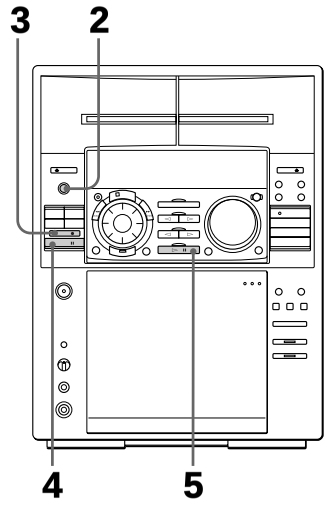
4 Start playing the music and adjust the volume.

5 Adjust the microphone volume by turning MIC LEVEL.

When you are done

Turn MIC LEVEL to 0 and disconnect the microphone from MIX MIC, then press KARAOKE PON / MPX repeatedly so that "🎤" disappears.

Mixing and recording sounds



1 Do the above steps 1 to 5. Then, insert a tape in deck B.

continued

2 Press FUNCTION repeatedly to select the source you desire and set it to pause mode.

3 Press REC ○.

4 Press PAUSE ⏸.

5 Press CD ▷ to start playing the CD player (or TAPE ▷).
Playback starts. Start singing along with the music.

To stop recording

Press ☐ STOP.

Tips

- If acoustic feedback (howling) occurs, move the microphone away from the speakers or change the direction of the microphone.
- If you want to record your voice through the microphone only, you can do so by selecting the CD function and not playing a CD.

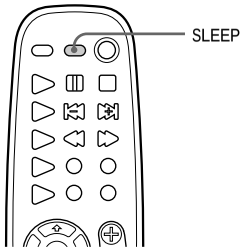
Notes

- Karaoke mode is cancelled if:
  - —you press EFFECT or a sound effect
  - —you press FUNCTION
  - —you turn off the power
- The instrumental sound may be reduced as well as the singer's voice when the sound is recorded in monaural.
- The singer's voice may not be reduced when:
  - —only a few instruments are playing
  - —a duet is being played
  - —the source has strong echoes or chorus
  - —the singer's voice deviates from the center.
  - —the voice on the source is singing in high soprano or tenor.

Falling asleep to music

— Sleep Timer

You can let the system turn off at the preset time by using the remote, so you can sleep to the music. You can preset the time to be turned off by 10 minutes.



➡ Press SLEEP on the remote.
Every time you press the button, the minute display (the turn-off time) changes as follows:
AUTO → 90min → 80min → 70min → ··· → 10min → OFF → AUTO ···

When you choose auto

The power turns off when the current CD or tape finishes playback (for up to 100 minutes).

To check the remaining time

Press SLEEP once.

To change the time to turn off

Select the time you want by pressing SLEEP repeatedly.

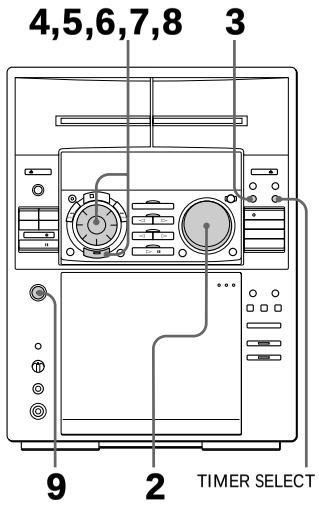
To cancel the Sleep Timer function

Press SLEEP repeatedly until "OFF" appears.

Waking up to music

— Wake-up Timer

You can wake up to music at a preset time every day. Make sure you have set the clock (see "Step 2: Setting the time").

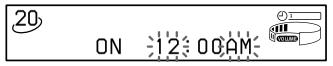


1 Prepare the music source you want to play.
- CD: Insert a CD. To start from a specific track, make a program (see "Programming the CD tracks").
- Tape: Insert an tape with the side you want to play facing forward.
  When both decks A and B have tapes in them, play will start from deck A.
- Radio: Tune in the preset station you want (see "Step 3: Presetting radio stations").

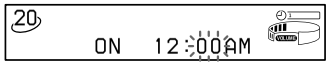
2 Adjust the volume.

3 Press 🕘/CLOCK SET.
"SET DAILY 1" appears.

4 Turn the jog dial to select DAILY 1 or 2, then press ENTER.
"ON" appears and the hour digits flash in the display.



5 Set the time to start playback.
Turn the jog dial to set the hour, then press ENTER.
The minute indication starts flashing.



Turn the jog dial to set the minute, then press ENTER.
The hour indication flashes again.

6 Set the time to stop playback following the above procedure.

7 Turn the jog dial until the music source you want appears.
The indications change as follows:
TUNER ⟷ CD PLAY ⟷ TAPE PLAY

8 Press ENTER.
The start time, followed by the stop time and the music source, appears, then the original display appears.

9 Turn off the power.

continued

Ver. 1.1

Waking up to music (continued)

To check the setting

Press TIMER SELECT and turn the jog dial to select the respective mode (DAILY 1 or DAILY 2), then press ENTER. To change the setting, start over from step 1.

To cancel the timer operation

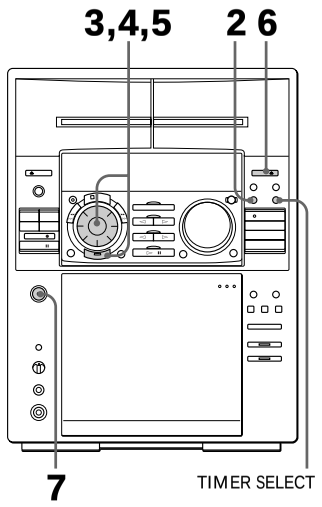
Press TIMER SELECT and turn the jog dial to select “OFF”, then press ENTER.

Tip

The power turns on 15 seconds before the preset time.

Timer-recording radio programs

To timer-record, you must preset the radio station (see “Step 3: Presetting radio stations”) and set the clock (see “Step 2: Setting the time”) beforehand.



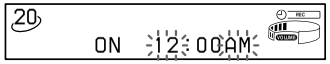
1 Tune in the preset radio station (see “Listening to the radio”).

2 Press ⏲/CLOCK SET.

“SET DAILY 1” appears.

3 Turn the jog dial to select REC, then press ENTER.

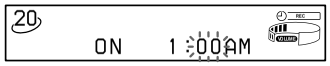
“ON” appears and the hour digits flash in the display.



4 Set the time to start recording.

Turn the jog dial to set the hour, then press ENTER.

The minute indication starts flashing.



Turn the jog dial to set the minute, then press ENTER.

The hour indication flashes again.

5 Set the time to stop recording following the above procedure.

The start time appears, followed by the stop time, the recording source and the radio station, then the original display appears.

6 Insert a blank tape into deck B.

7 Turn off the power.

When the recording starts, the volume level is set to the minimum.

To check the setting

Press TIMER SELECT and turn the jog dial to select “REC”, then press ENTER. To change the setting, start over from step 1.

To cancel the timer operation

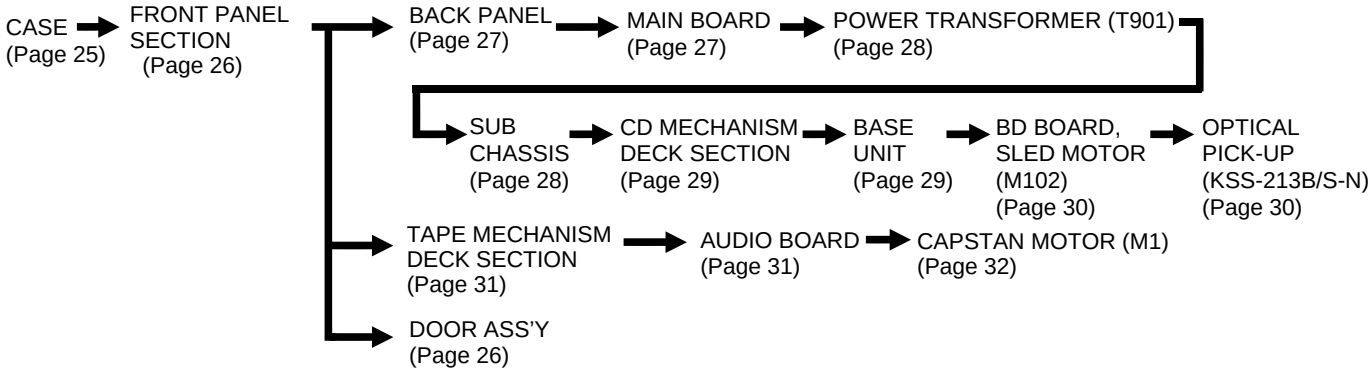
Press TIMER SELECT and turn the jog dial to select “OFF”, then press ENTER.

Note

If the power is on at the preset time, the recording will not be made.

SECTION 2
DISASSEMBLY

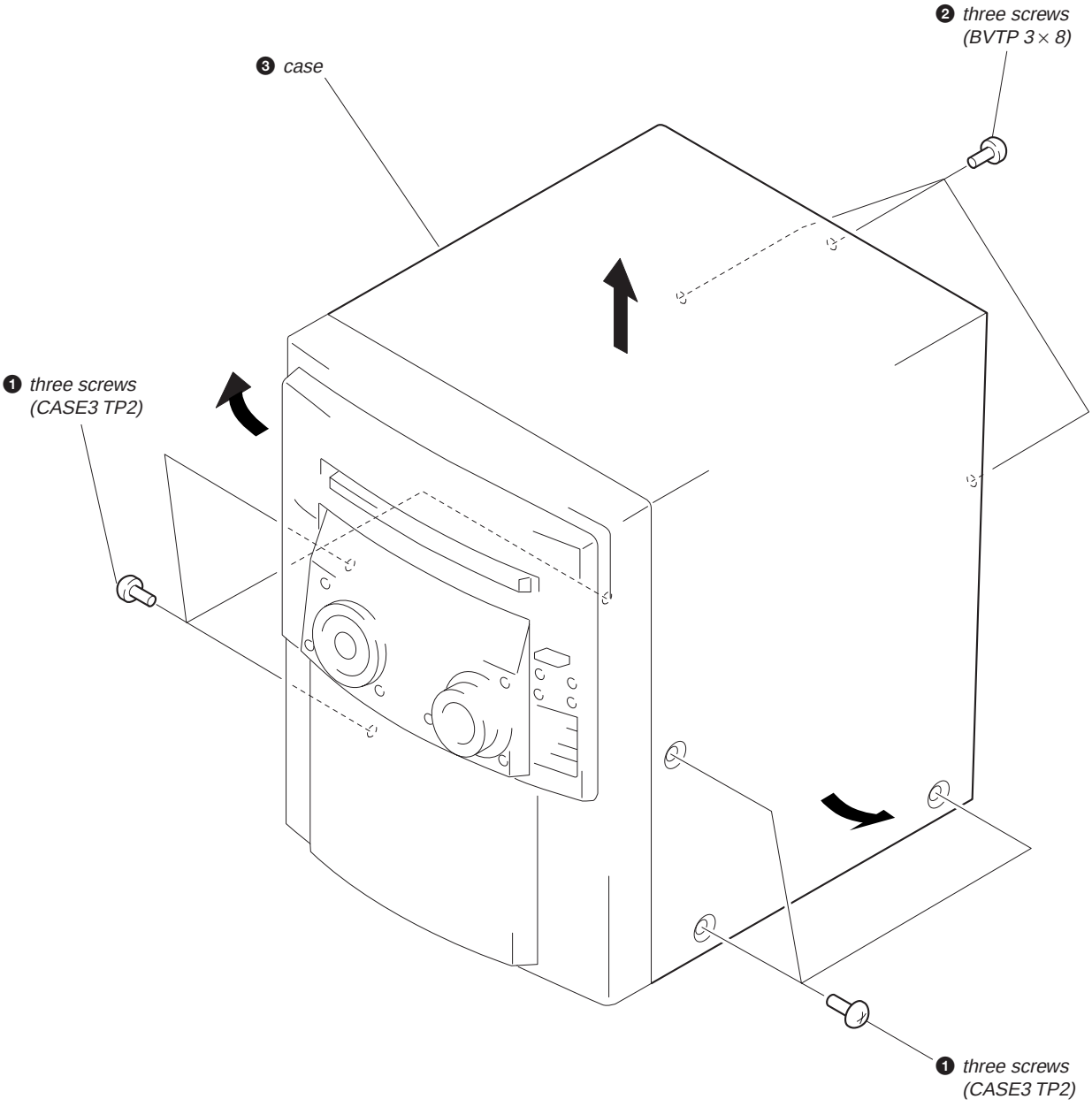
• This set can be disassembled in the order shown below.


CASE (Page 25)
FRONT PANEL SECTION (Page 26)
BACK PANEL (Page 27)
MAIN BOARD (Page 27)
POWER TRANSFORMER (T901) (Page 28)
SUB CHASSIS (Page 28)
CD MECHANISM DECK SECTION (Page 29)
BASE UNIT (Page 29)
BD BOARD, SLED MOTOR (M102) (Page 30)
OPTICAL PICK-UP (KSS-213B/S-N) (Page 30)
TAPE MECHANISM DECK SECTION (Page 31)
AUDIO BOARD (Page 31)
CAPSTAN MOTOR (M1) (Page 32)
DOOR ASS'Y (Page 26)

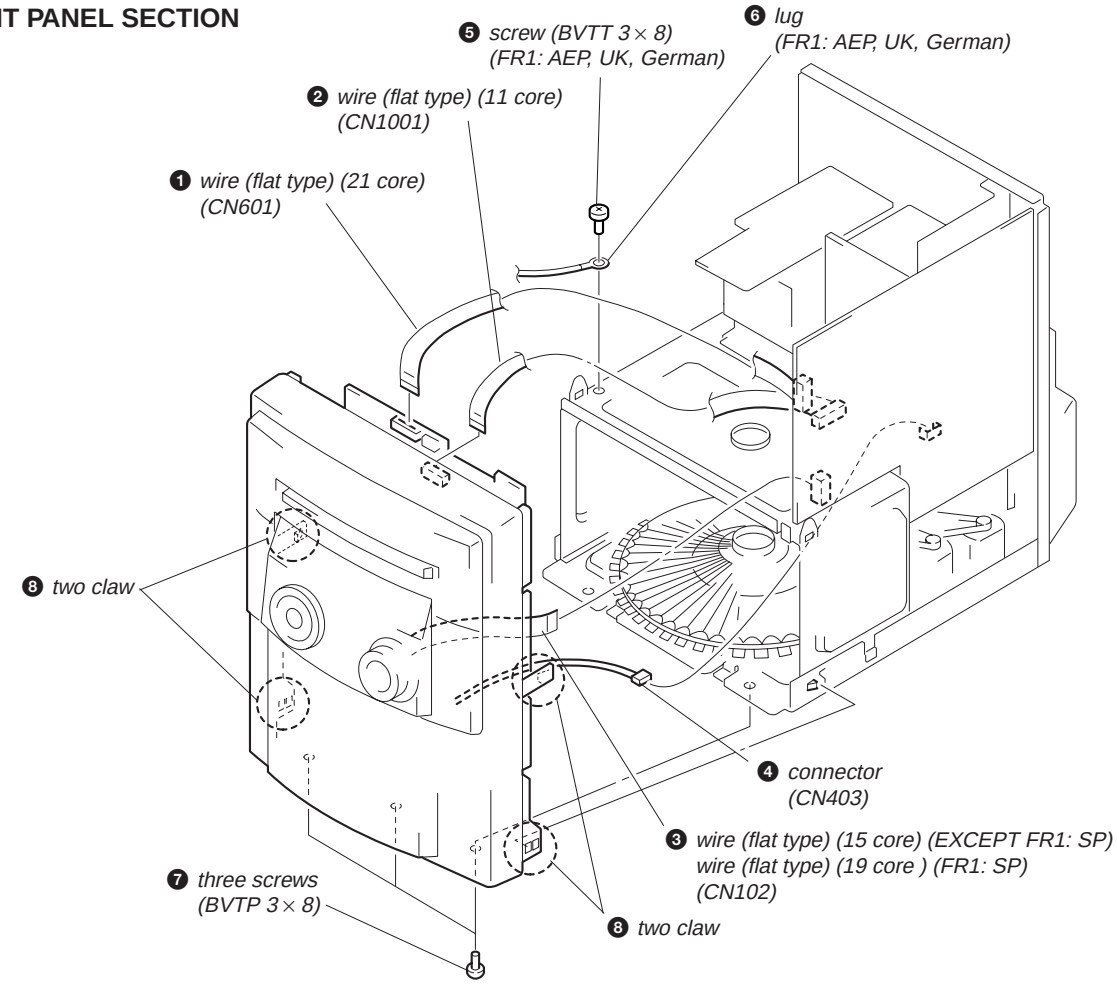
• Abbreviation
  G : German
  SP : Singapore
  AUS : Australian

Note: Follow the disassembly procedure in the numerical order given.

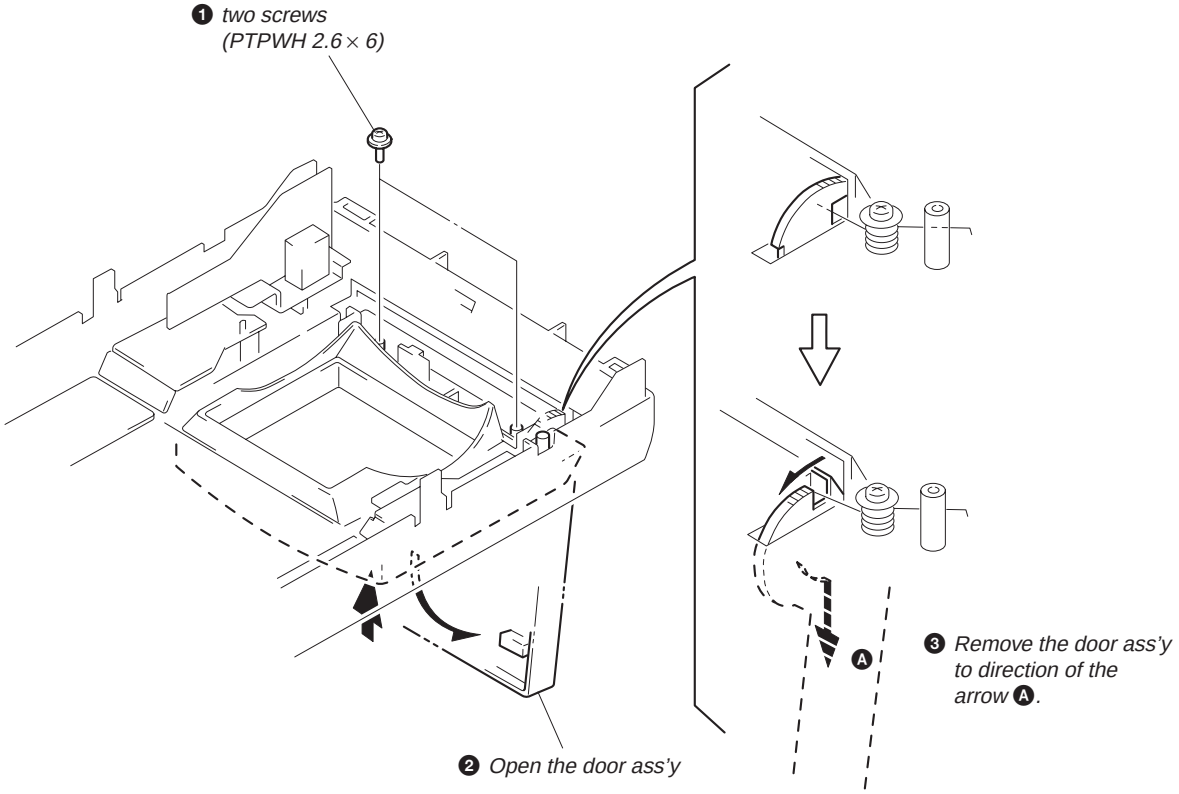
CASE



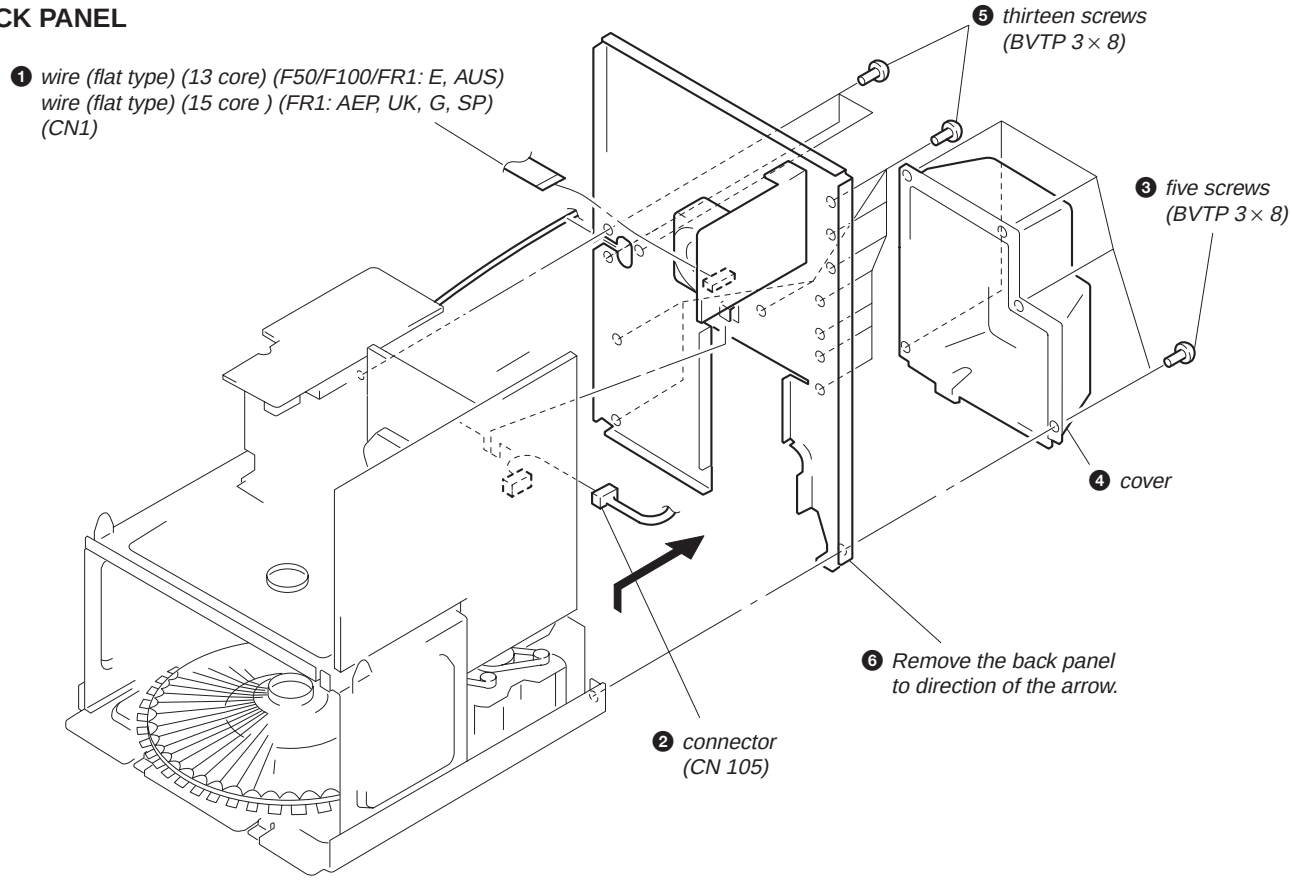
FRONT PANEL SECTION



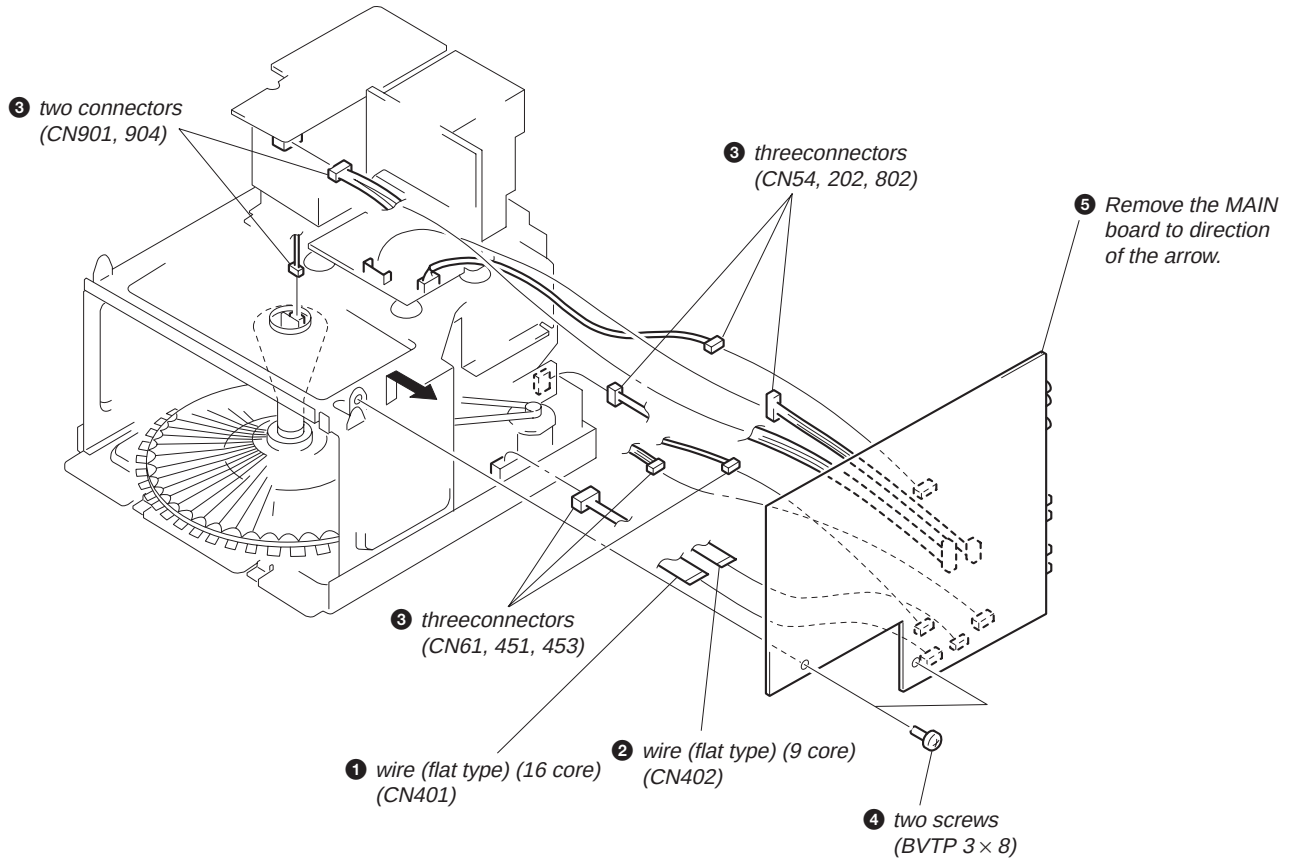
DOOR ASS'Y



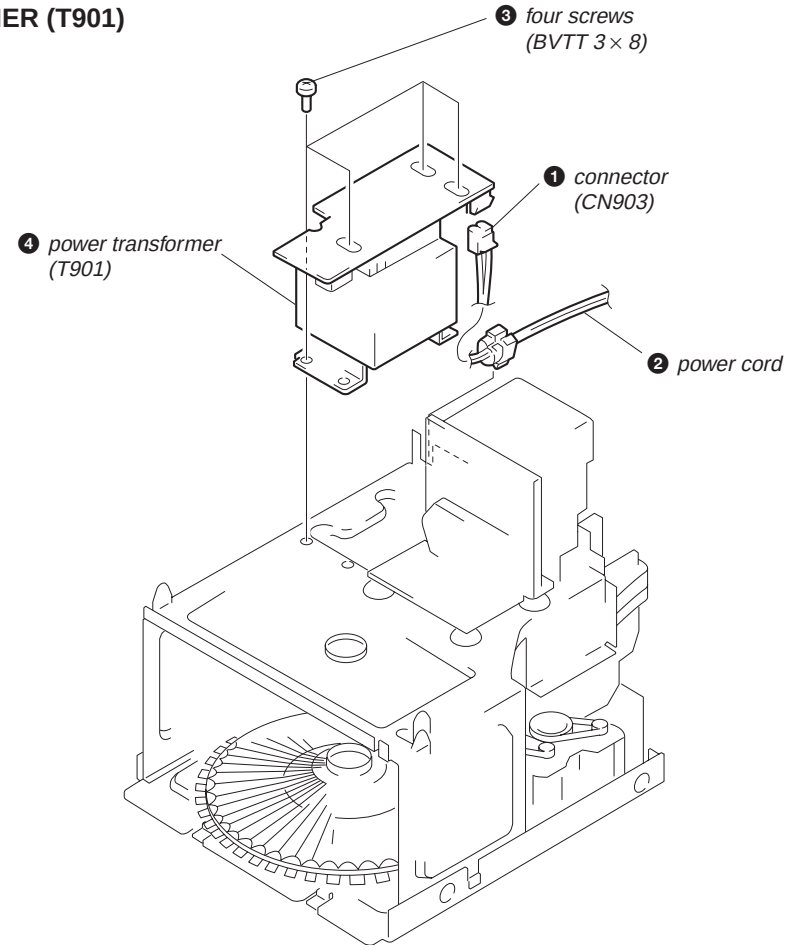
BACK PANEL


❶ wire (flat type) (13 core) (F50/F100/FR1: E, AUS)
wire (flat type) (15 core) (FR1: AEP, UK, G, SP)
(CN1)
❺ thirteen screws
(BVTP 3 × 8)
❸ five screws
(BVTP 3 × 8)
❹ cover
❻ Remove the back panel
to direction of the arrow.
❷ connector
(CN 105)

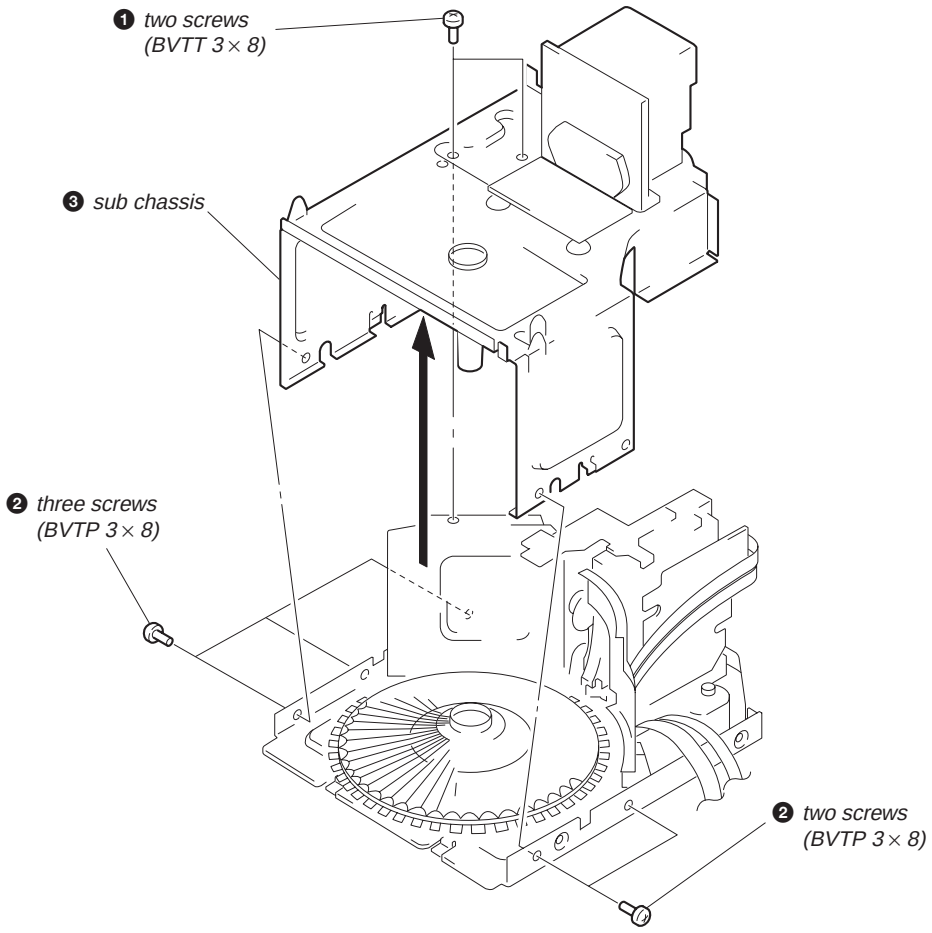
MAIN BOARD



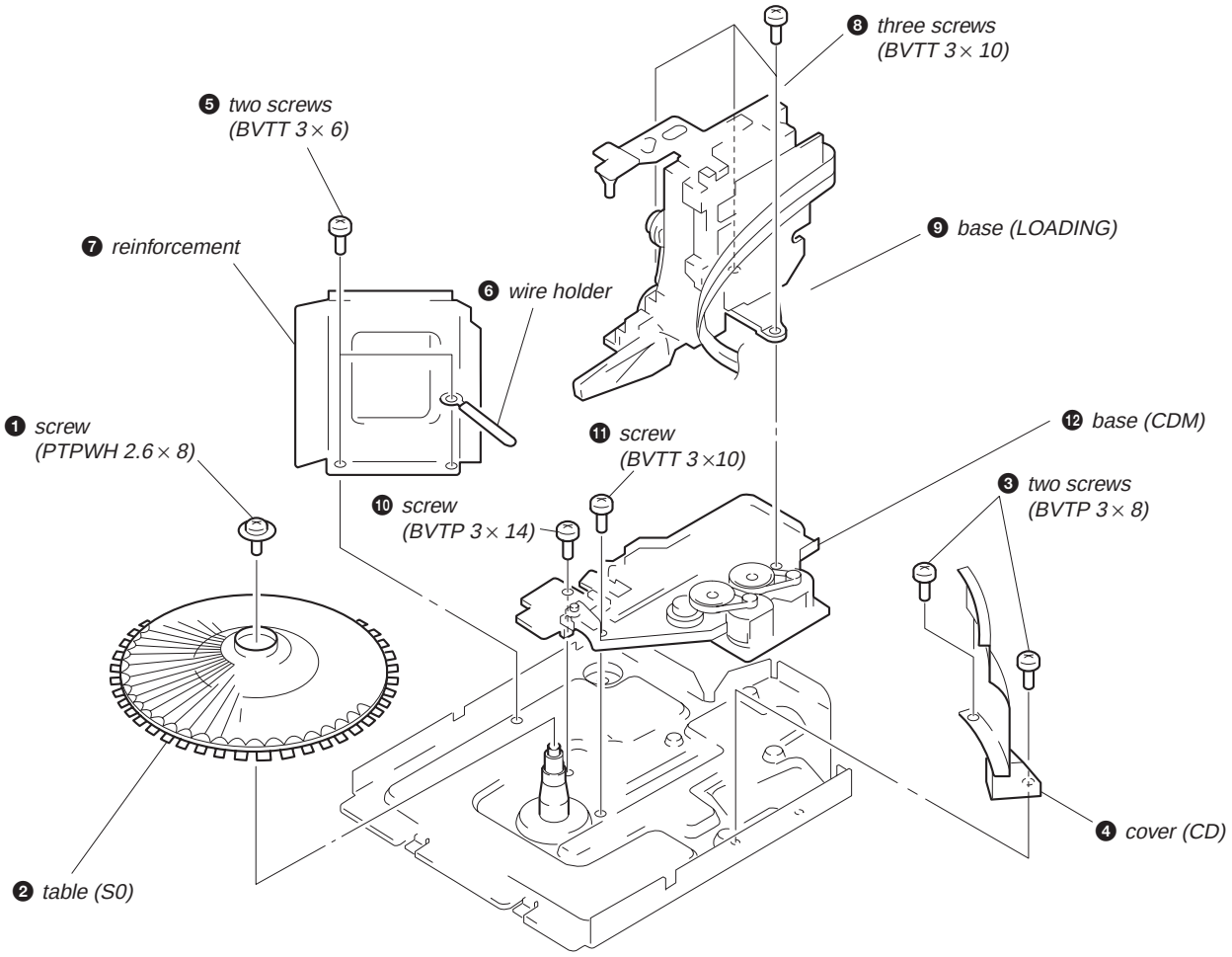
POWER TRANSFORMER (T901)



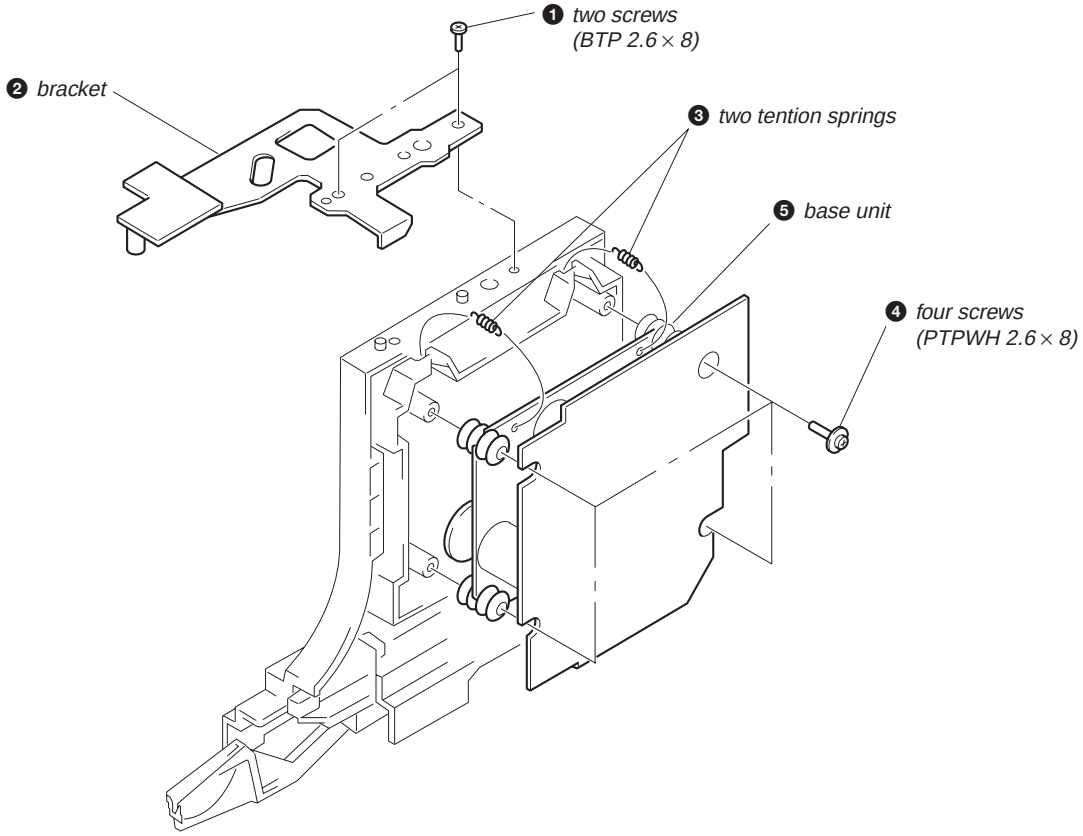
SUB CHASSIS



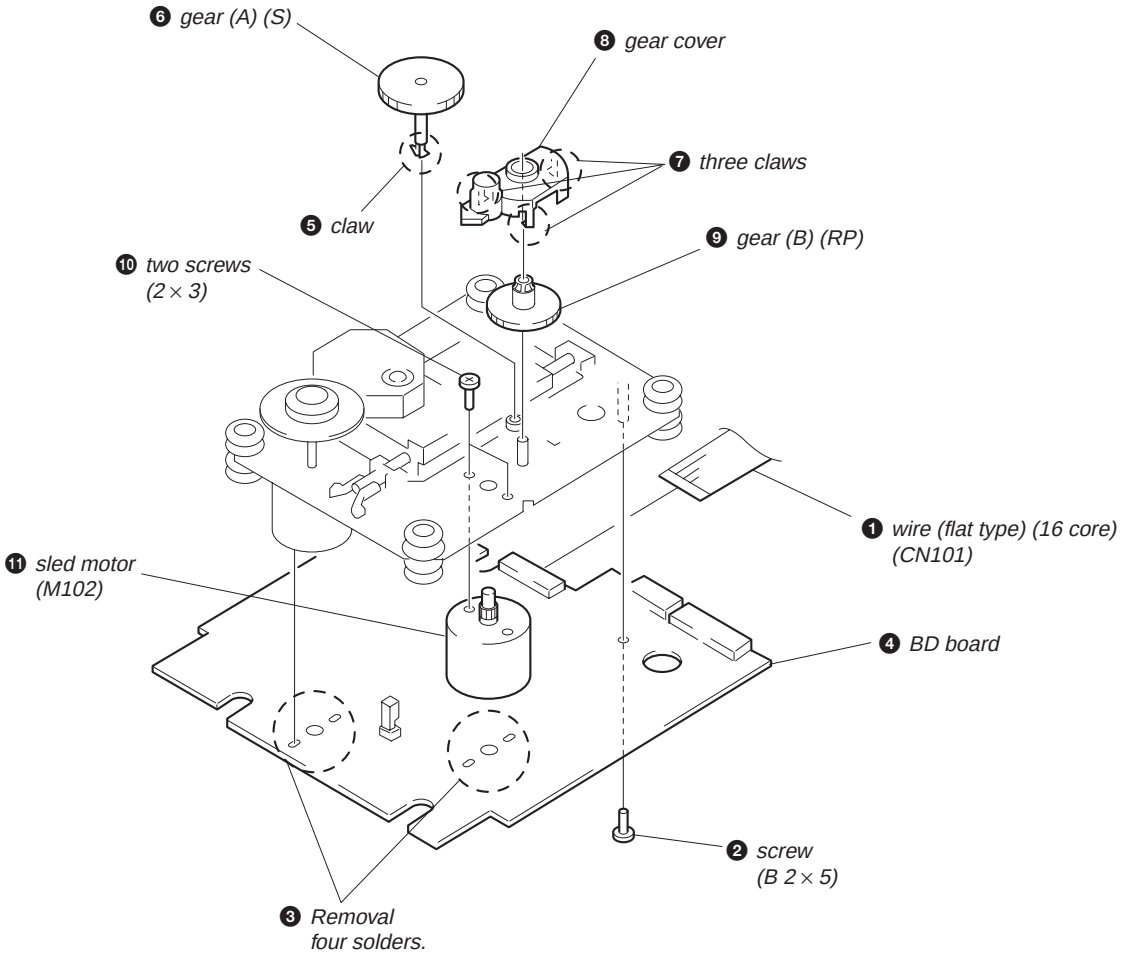
CD MECHANISM DECK SECTION



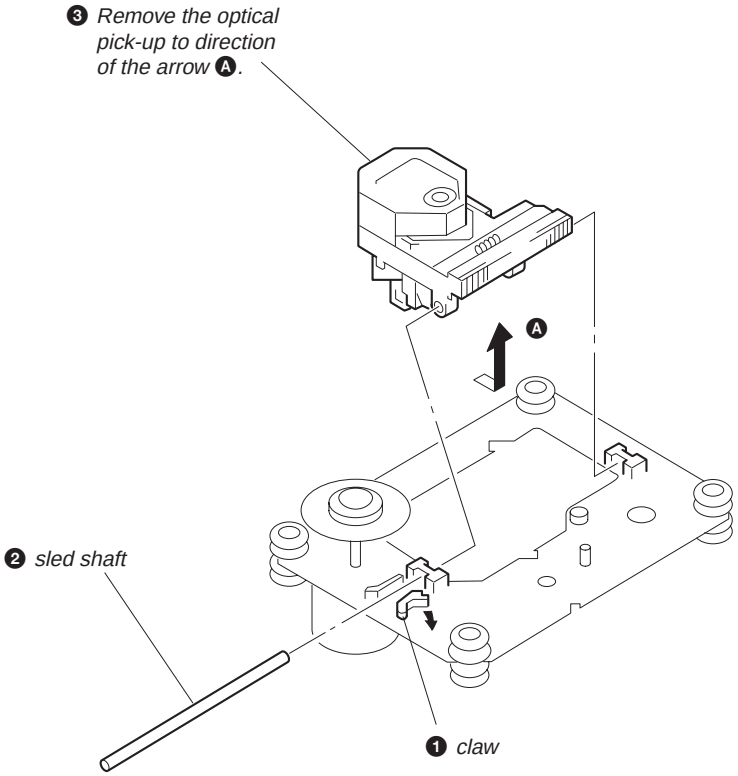
BASE UNIT



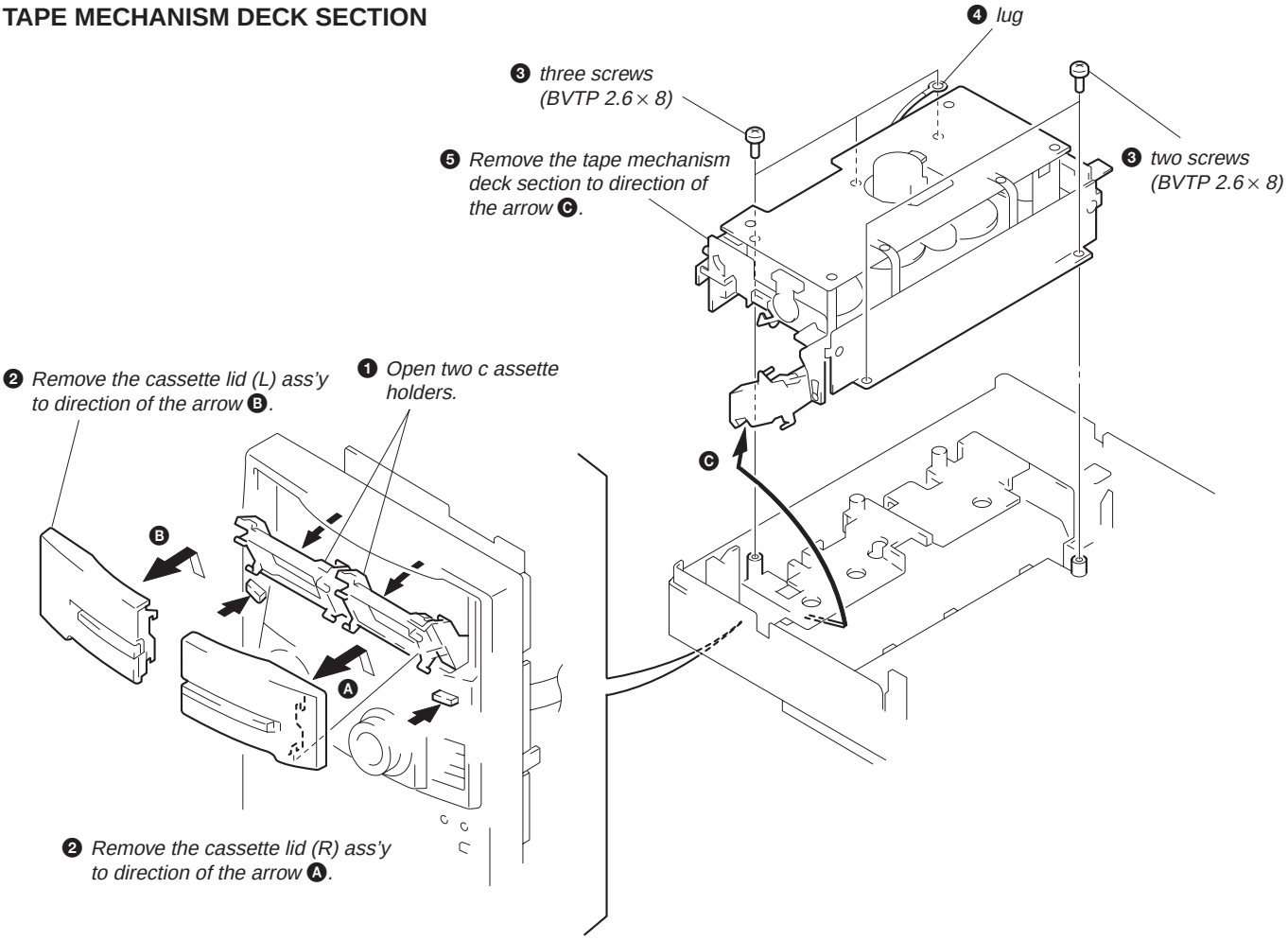
BD BOARD, SLED MOTOR (M102)



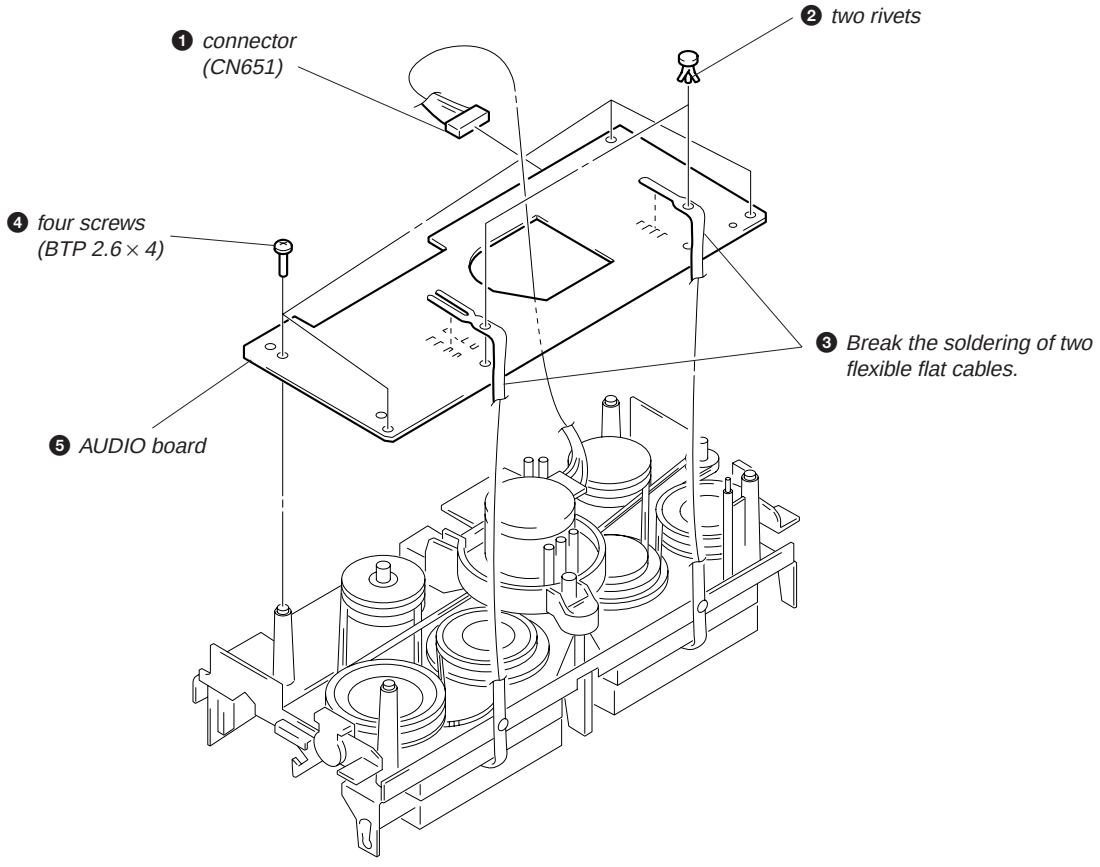
OPTICAL PICK-UP (KSS-213B/S-N)



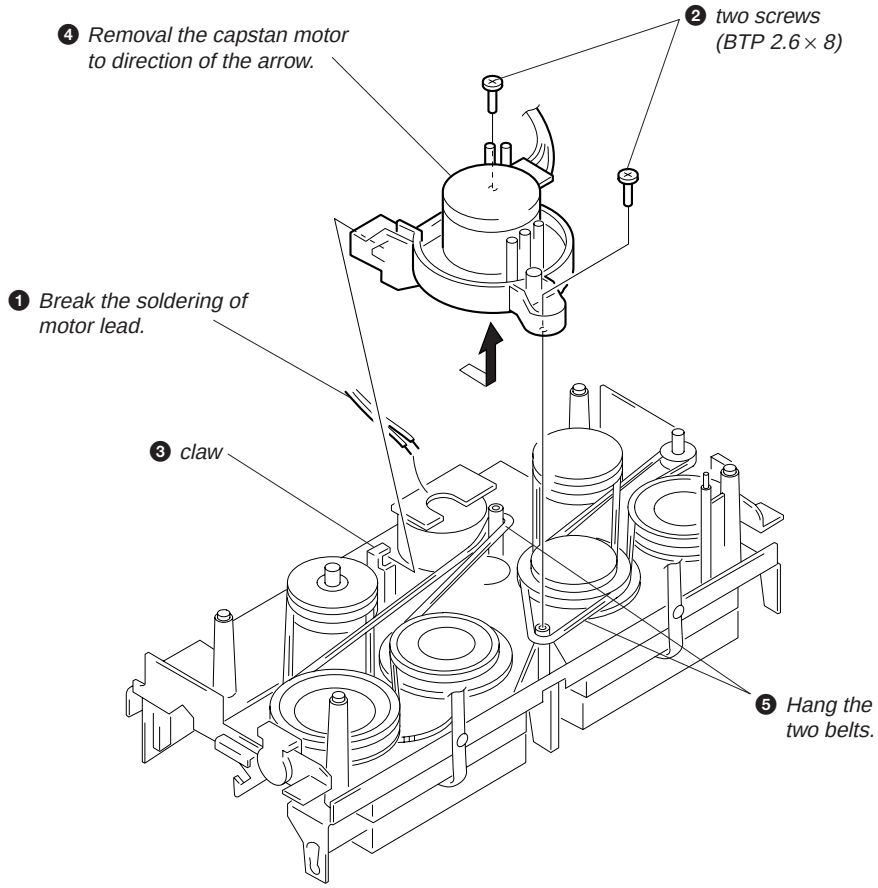
TAPE MECHANISM DECK SECTION


❹ lug
❸ three screws (BVTP 2.6 × 8)
❺ Remove the tape mechanism deck section to direction of the arrow Ⓒ.
❸ two screws (BVTP 2.6 × 8)
❷ Remove the cassette lid (L) ass'y to direction of the arrow Ⓑ.
❶ Open two c assette holders.
Ⓒ
Ⓑ
Ⓐ
❷ Remove the cassette lid (R) ass'y to direction of the arrow Ⓐ.

AUDIO BOARD



CAPSTAN MOTOR (M1)


❹ Removal the capstan motor to direction of the arrow.
❷ two screws (BTP 2.6 × 8)
❶ Break the soldering of motor lead.
❸ claw
❺ Hang the two belts.

SECTION 3
TEST MODE

[MC Cold Reset]

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. Press three buttons FUNCTION, ENTER and CD PLUS 1 simultaneously.
2. The fluorescent indicator tube becomes blank instantaneously, and the set is reset.

[MC Hot Reset]

- This mode resets the set with the preset data kept stored in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

Procedure:

1. Press three buttons FUNCTION, ENTER and CONTINUE/TUNING MODE simultaneously.
2. The fluorescent indicator tube becomes blank instantaneously, and the set is reset.

[MC Test Mode]

- This mode can be used for operation check of Ampsection, Tuner section and Deck section.

Procedure:

- Press three buttons FUNTION , ENTER and PROGRAM simultaneously.
  In the MC Test Mode, blinking the fluorescent indicator tube displays "Volume".

1. Test Mode in Amp Section
   - Press GEQ MEMO button to GEG maximum and SUR off.
   - Press EFFECT button to GEQ flat and SUR off.
   - Press GEQ FILE button to GEQ minimum and SUR off.
   - Rotarion VOLUME knob in "+" derection a little, the fuorescent indicator tube displays "Volume MAX".
   - Rotation VOLUME knob in "–" direction a little, the fluorescent indicator tube displays "Volume MIN".
   - Other function is a regular.
2. Test Mode in Tuner Section
   - In the preset mode
   - If after cold reset, preset value set a master control I.C.
   - Receive tuning UP/DN sircs irrepective of during testmode.
3. Test Mode in Deck Section
   - If recording, function to Video and line mute off.
   - Rewind after recording the tape stop to begin the recording point.
   - If press HI-SPEED DUBBING button during recoeding, exactly the tape speed fast.
   - If press HI-SPEED DUBIING button during playback, the tape speed fast. One more press button, back to a normal.

[Change-over of FUNCTION Name]

- The FUNCTION name of external input terminal can be changed over to VIDEO or MD.

Procedure:

1. Press POWER button to turn the set OFF.
2. Press POWER button together with GROOVE button, and the power is turned on, the display of fluorescent indicator tube changes to "MD" or "VIDEO" instantaneously, and thus the FUNCTION is changed over.

[Change-over of AM Tuner Step between 9kHz and 10kHz]

- A step of AM channels can be changed over between 9kHz and 10kHz.

Procedure:

1. Press POWER button to turn the set ON.
2. Select the function "TUNER", and press TUNER/BAND button to select the BAND "AM".
3. Press POWER button to turn the set OFF.
4. Press ENTER and POWER buttons simultaneously, and the display of fluorescent indicator tube changes to "AM 9k STEP" or "AM 10k STEP", and thus the channel step is changed over.

[LED and Fluorescent Indicator Tube All Lit, Key Check Mode]

Procedure:

1. Press three buttons FUNCTION, ENTER and SHUFFLE simultaneously.
2. LEDs and fluorescent indicator tube are all turned on.
   Press CD PLUS 1 button, the fluorescent indicator tube displays MC version, GC version, model name and destination to cycle.
3. Press CONTINUE button, and the key check mode is activated.
4. In the key check mode, the fluorescent indicator tube displays "K 1 V0 J0". Each time a button is pressed, "K"value increases. However, once a button is pressed, it is no longer taken into account.
   "J" value increases like 1, 2, 3 ... if rotating JOG knob in "+" direction, or it decreases like 0, 9, 8 ... if rotating in "–" direction.
   "V" value increases like 1, 2, 3 ... if rotating VOLUME knob in "+" direction, or it decreases like 0, 9, 8 ... if rotating in "–" direction.
5. To exit from this mode, press three buttons in the same manner a step 1, or disconnect the power cord.

[ADJ MODE]

Procedure:

1. Press the POWER button to turn the power ON.
2. Open the front cover, and press the PLUS ONE button.
3. Set the disc (YEDS-18 : 3-702-101-01) in the PLUS ONE slit.
4. Close the front cover, and chuck the disc.
5. Press the POWER button, and turn OFF the power.
6. Short pin ① and pin ③ of CN404 on the MAIN board.
7. Press the POWER button and turn ON the power.

The ADJ mode is set with the above.

Differences with normal mode

- No high speed search is performed during access
- Ignored even if GFS becomes L
- Ignored even if Q data cannot be read
- Spindle servo gain is set to 12 cm mode (Even with 8 cm disc)

The following special functions will work when certain functions are pressed in this mode.

Special functions in ADJ mode

(The ( ) buttons function only with the general purpose remote.)

Button	Function
(3)	Tracking servo, sled servo OFF
(8)	Tracking servo, sled servo ON
CHECK	S shape observation mode
CLEAR	Eccentric measurement mode

[Aging Mode]

- This mode can be used for operation check of CD section and tape deck section.
- If an error occurred:
  The aging operation stops.
- If no error occurs:
  The aging operation continues repeatedly.

1. Aging Mode in CD Section

- Operating jig (HCD-F50 only)
  Remote Commander (for aging mode): J-2501-123-A

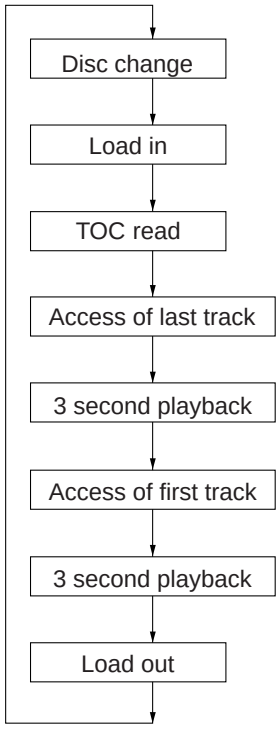
1-1. Operating Method of Aging Mode

1. Turn ON the power of the unit. Open the front cover.
2. Press three buttons [ENTER], [FUNCTION] and [MEMO INPUT] simultaneously .
3. When the disc set mode is set, the [►] and [II] LEDs blink.
4. Rotate the JOG dial. The slits (No. 10, 20, 30, 40, 51) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
5. Set the use/disuse of the self protection function in errors. Press the REPEAT button. When REPEAT is displayed on the fluorescent indicator tube, the self protection function during the error will become “Use”.
   If the [REPEAT] display is OFF, it means that the function is not used. (Normally set to “Use” when performing aging.)
7. Cloase the front cover and press the [►II] button.
8. The [►] LED will light up, the aging mode is set, and aging is started.
9. The aging cycle lasts 3 minutes. When problems occur during aging, the error number will be displayed on the fluorescent indicator tube, [►] LED blinks, and the [II] LED will light up.
   (Refer to the following table for the details of the errors.)
10. Aging will be repeated as long as no errors occur.
11. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
12. To end aging, press the [POWER] button

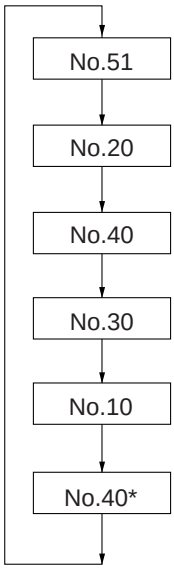
1-2. CD Section Sequence

- During the aging mode, compact disces are seleted in the following sequence:

Sequence of Aging Mode

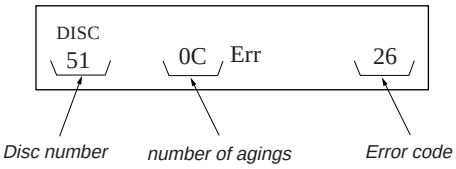


Order of Disc Chenge
(1 sycle takes 3 minutes)



* DISC No.40 chucks twice during one cycle.
To differentiate, the “PROGRAM” indicator of the fluorescent indicator tube will light up during the second chucking.

Error Display



Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	———————	No function
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (From focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search

The * numbers mean the following according to the state of the unit during aging
2 : From chucking to end of TOC read
3 : From end of TOC read to end of last track playback
4 : From end of last track playback to end of first track playback

2. Aging Mode in Tape Deck Section (HCD-F100/FR1 only)

2-1. Operating Method of Aging Mode

1. Load a commercially available 10-minute tape into the decks A and B respectively.
   (If a 10-minute tape is not available, another tape may be used but a cycle time will be longer.)
2. Select the function "TAPE".
3. Rewind tapes in advance by pressing ◄◄ button respectively on decks A and B.
4. Press three buttons [ENTER], [FUNCTION], and [MEMO INPUT] simultaneously.
5. Press [TAPE A ►] button. (This button triggers the aging mode.)
6. The aging mode is activated if "AGING A" is displayed on the fluorescent indicator tube.
7. In the aging mode, the aging is executed in a sequence given in "2-2. Operation during Aging Mode".
   The aging continues unless an alarm occurred.
8. To exit from the aging mode, press [POWER] button to turn the set OFF.

2-2. Operation during Aging Mode

In the aging mode, the program is executed in the following sequence.

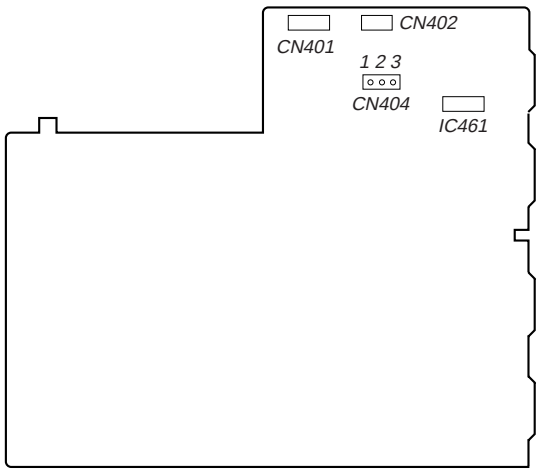
1. A tape on FWD side is played for one minute.
2. PAUSE STOP is made.
3. Recording is made for 3 minutes. (For the deck not having the record function, the play is executed. In this case, [►] LED does not light up.)
4. FF is executed up to the end of tape.
5. A tape is reversed, and the tape on REV side is played for one minute.
6. PAUSE STOP is made.
7. Recording is made for 3 minutes. (For the deck not having the record function, the play is executed. In this case, [◄] LED does not light up.)
8. FF is executed up to the end of tape.
9. Steps 1 through 8 are executed for the other deck.
10. Steps 1 through 9 are repeated unless an alarm occurred.

2-3. Deck Section Sequence

- During the aging mode, decks are selected in the following sequence:

[Deck A (FWD)] → [Deck A (REV)]
↑ ↓
[Deck B (REV)] ← [Deck B (FWD)]

Location:
[MAIN BOARD] (Component Side)



SECTION 4
MECHANICAL ADJUSTMENT

• TAPE MECHANISM DECK SECTION

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

• Torque Measurement

Torque	Torque Meter	Meter Reading
Forward	CQ-102C	36 to 61g•cm (0.50 – 0.84 oz•inch)
Forward Back Tension	CQ-102C	2 to 6g•cm (0.026 – 0.082 oz•inch)
Reverse	CQ-102RC	36 to 61g•cm (0.50 – 0.84 oz•inch)
Reverse Back Tension	CQ-102RC	2 to 6g•cm (0.026 – 0.082 oz•inch)
FF, REW	CQ-201B	61 to 143g•cm (0.85 – 1.98 oz•inch)

• Tape Tension Measurement

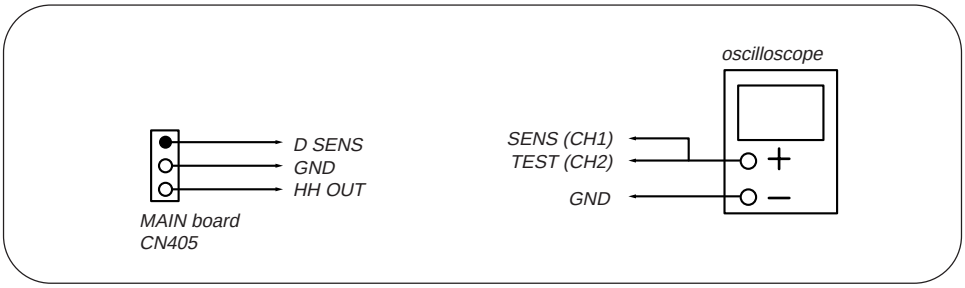
Torque	Tension Meter	Meter Reading
Forward	CQ-403A	more than 100 g (3.52 oz)
Reverse	CQ-403R	more than 100 g (3.52 oz)

• CD MECHANISM DECK SECTION

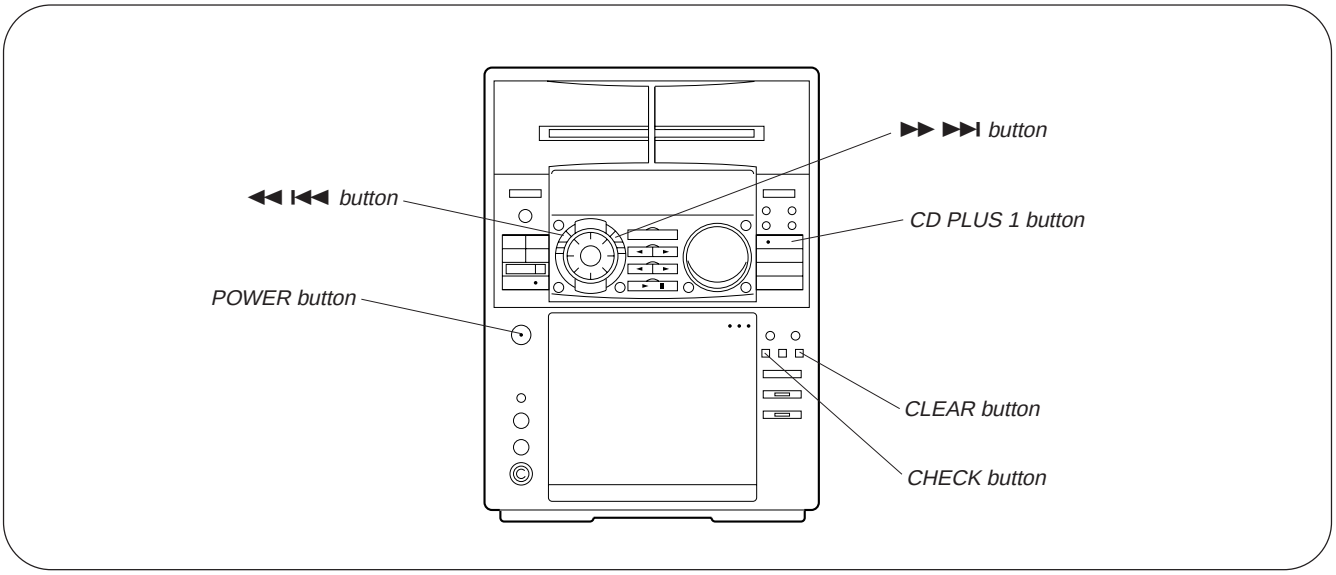
To adjust the mechanism section, enter the mechanism section adjustment mode.
For how to enter the mechanism section adjustment mode, refer to each adjustment section.

DISC SENSOR ALIGMENT

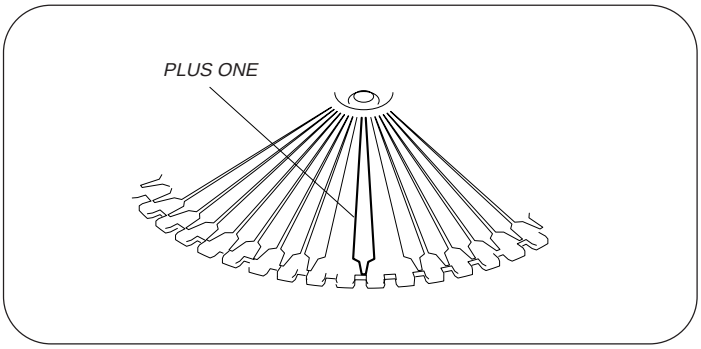
1. Make sure that there is no disc in the unit.
2. Connect an oscilloscope to CN405 of the MAIN board.



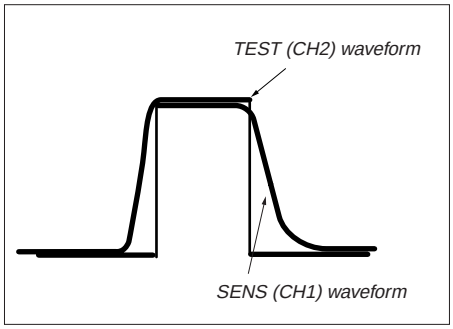
3. While pressing the CLEAR and CD PLUS 1 buttons at the same time and turn ON the power.

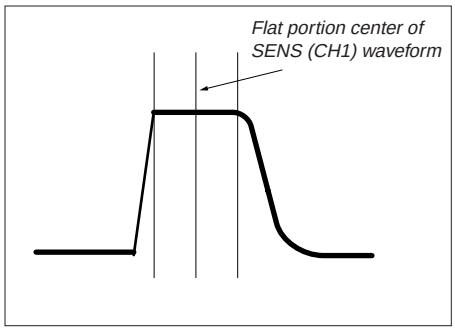


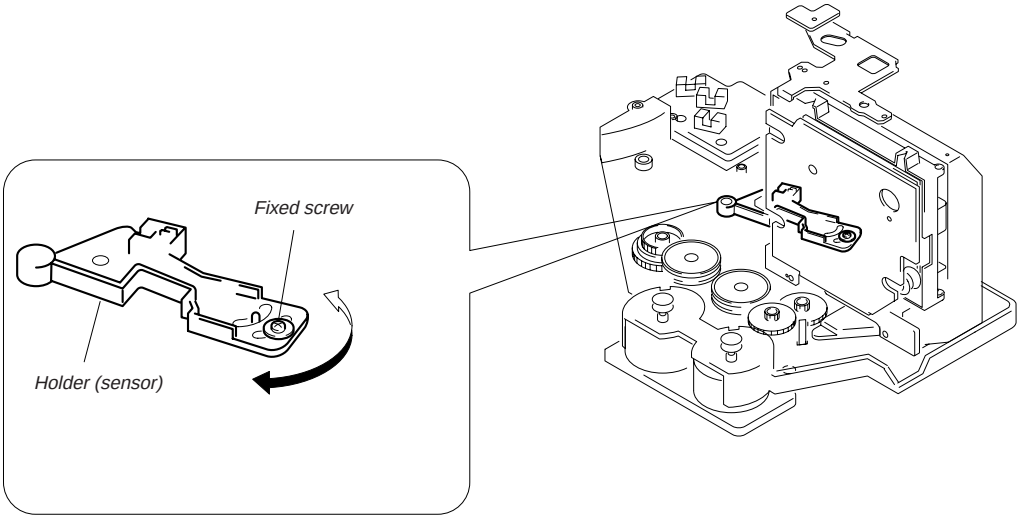
4. The fluorescent indicator tube shows as follows, and the mechanism section adjustment mode is set.



5. The disc table rotates in the counterclockwise direction. The disc table rotation time is displayed with ‘’PLUS ONE” slit as a measuring point. (“LEFt” is displayed initially.)
6. Measure the waveform of the oscilloscope when the disc table is rotating.
7. Move the holder (sensor) center so that the flat portion center at the top of the SENS (CH1) input waveform and the ‘’H” center of TEST (CH2) coincide.





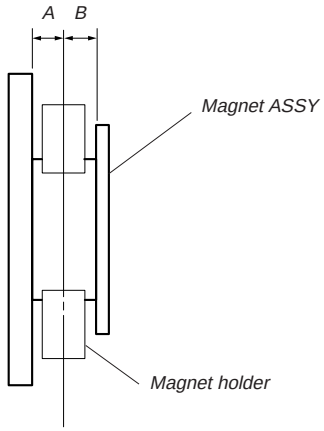


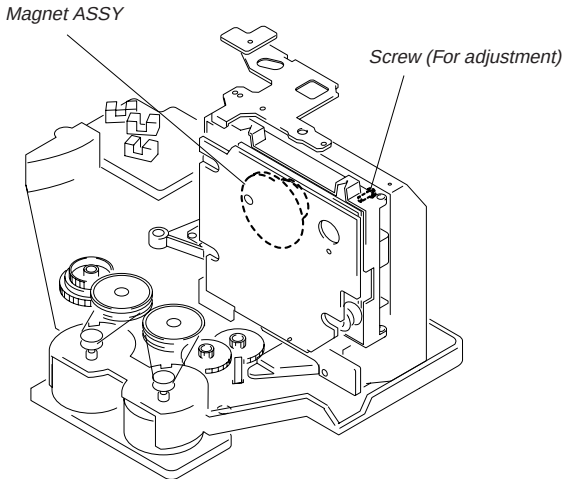
8. Tighten the fixed screw to fix the disc table, then press the CLEAR button.
9. The disc table rotates in the clockwise direction. Measure the waveform and make sure that the flat portion center at the top of the SENS (CH1) input waveform and the ‘’H” center of TEST (CH2) coincide.
10. If the adjustment is not successful, press the CLEAR button to rotate the disc table in the counterclockwise direction, and perform steps 6 to 9.

Note: During the adjustment mode, the rotational direction is switched each time the CLEAR button is pressed. Immediately after the button is pressed, “LEFt” or “rght” is displayed to notify of the rotational direction.
Pressing the CHECK button enters the loading mode which will be described later. Pressing the CLEAR button rotates the disc table again.

MAGNET ASSY ALIGMENT

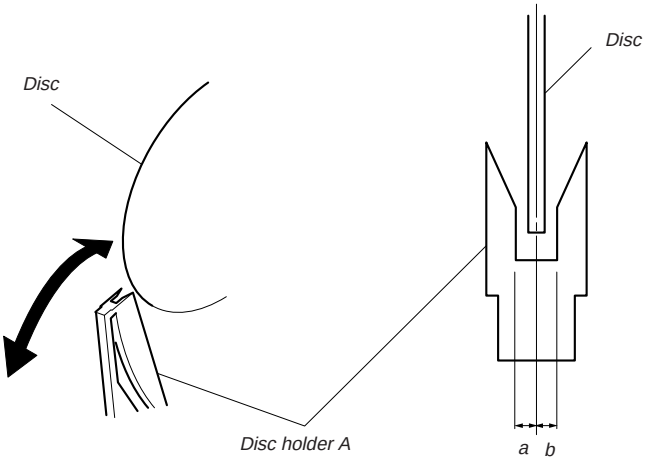
1. Check that there is no disc in the unit and then turn ON the power. Open the door, and set a disc in the PLUS ONE slit.
2. Turn OFF the power, close the door, and while pressing the CLEAR and CD PLUS 1 buttons simultaneously, turn ON the power again.
3. Press the CHECK button, and set the loading mode.
4. Press the ▶▶ ▶▶I button and chuck the disc.
5. Adjust the magnet assembly and magnet holder so that A=B as shown in the figure.



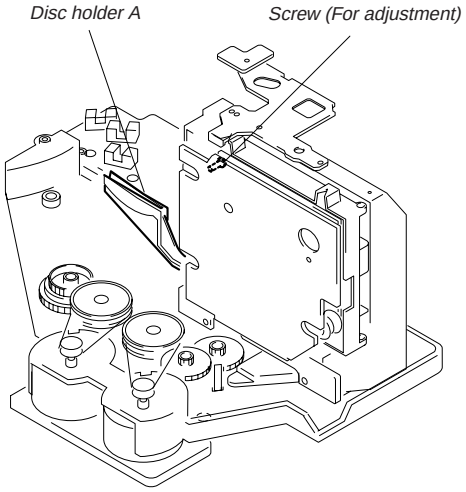


DISC HOLDER A ALIGMENT

1. Check that there is no disc in the unit and then turn ON the power. Open the door, and set a disc in the PLUS ONE slit.
2. Turn OFF the power, close the door, and while pressing the CLEAR and CD PLUS 1 buttons simultaneously, turn ON the power again.
3. Press the CHECK button, and set the loading mode.
4. Press the ▶▶ ▶▶I button and chuck the disc.
5. Press ▶▶ ▶▶I or ◀◀ I◀◀ button to stop the disc holder A slightly away from the disc.
6. Rotate and adjust the adjusting screw so that the center of the disc and that of the disc holder coincide.



a = b



SECTION 5
ELECTRICAL ADJUSTMENTS

DECK SECTION | 0dB=0.775V

1. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjust.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-ch.
7. Switches and controls should be set as follows unless otherwise specified.
8. Set to test mode. (Press key switch same time FUNCTION ENTER and PROGRAM button.)

• Test Tape

Tape	Signal	Used for
P-4-A100	10kHz, –10 dB	Azimuth Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment
P-4-L300	315Hz 0dB	Level Adjustment

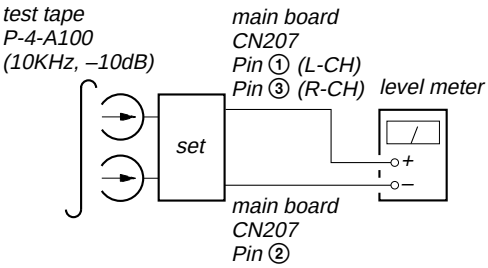
Record/Playback Head Azimuth Adjustment

DECK A **DECK B**

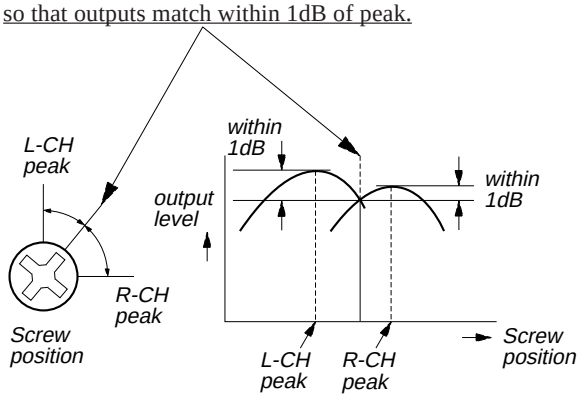
Note: Perform this adjustments for both decks

Procedure:

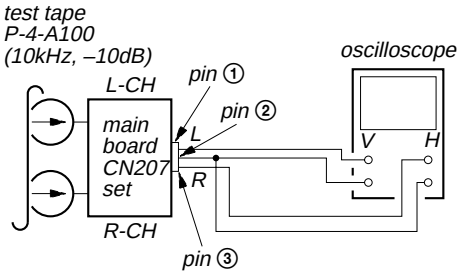
1. Mode: Playback (FWD)

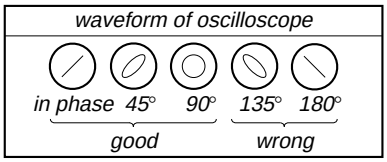


2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1dB of peak.



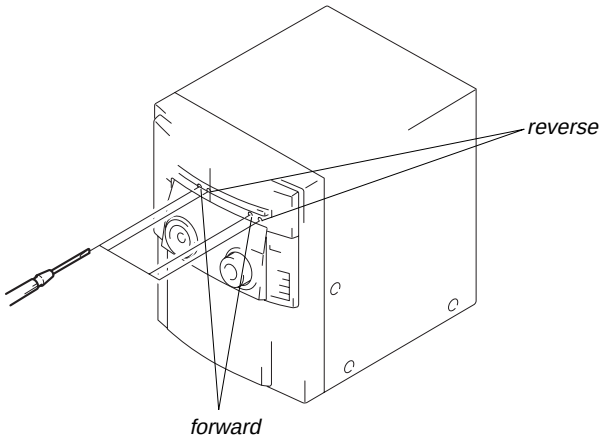
3. Mode: Playback (FWD)





4. Repeat steps 1 to 3 in playback (REV) mode.
5. After the adjustments, apply suitable locking compound to the pats adjusted.

Adjustment Location: Record/Playback Head (Deck A and B) and MAIN board.



Tape Speed Adjustment DECK A

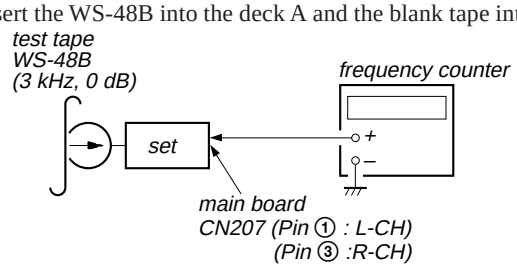
Note: Start the Tape Speed adjustment as below after setting to the test mode.
In the test mode, the tape speed is high during pressing the HIGH SPEED DUBBING button.

Procedure:

1. Turn the power switch on.
2. Press the FUNCTION button, ENTER button and PROGRAM button simultaneously.
   To exit from the test mode, press the POWER button.

Mode: Playback (FWD)

1. Insert the WS-48B into the deck A and the blank tape into the deck B.



2. Press the REC button and ► button on the deck B. Then the deck B is at recording mode.
3. Set the deck A to playback mode.
4. Keep pressing the HIGH SPEED DUBBING button in playback mode.
   Then at HIGH speed mode.
5. Adjust RV652 on the AUDIO board do that frequency counter reads 6,000 ± 90 Hz.
6. Take off the HIGH SPEED DUBBING button.
   Then at NORMAL speed mode.
7. Adjust RV651 on the AUDIO board so that frequency counter reads 3,000 ± 90 Hz.
8. Frequency difference between deck A and deck B the beginning of the tape should be within ± 1.5 %.

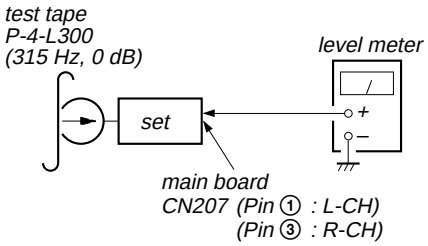
Adjustment Location: AUDIO board

Sample Volue of Wow and Flutter: 0.3% or less W.RMS (WS-48B)

Playback level Adjustment DECK A DECK B

Procedure:

Mode: Playback (FWD)



Deck A is RV311 (L-CH) and RV411 (R-CH), Deck B is RV301 (L-CH) and RV401 (R-CH) so that adjustment within adjustment level as follows.

Adjustment Level:

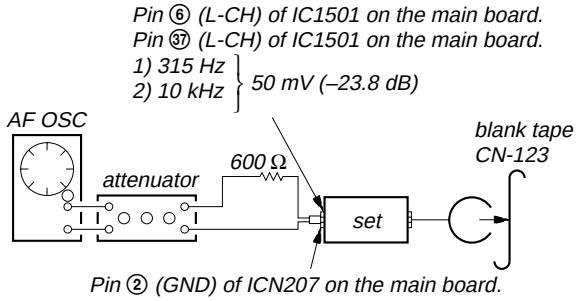
CN207 PB level: 301.5 to 338.3 mV (–8.2 to –7.2 dB) level difference between the channels: within ±0.5 dB

Adjustment Location: AUDIO and MAIN boards

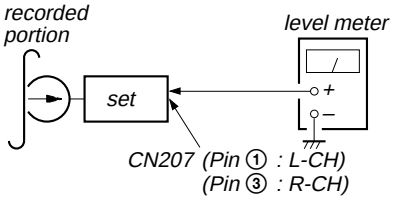
Record bias Current Adjustment DECK B

Procedure:

1. Mode: record



2. Mode: Playback



Confirm playback the signal recorded in step 1 become adjustable limits as follows.

If these levels do not adjustable limits, adjustment the RV341 (L-CH) and RV441 (R-CH) on the AUDIO board to repeat steps 1 and 2.

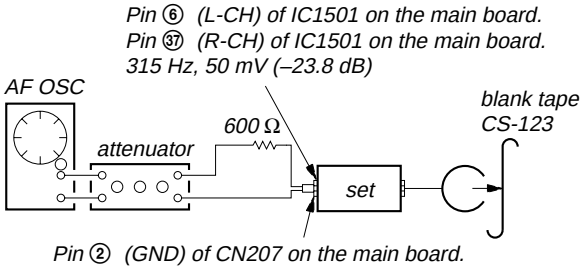
Adjustable limits: Playback output of 315 Hz to playback output of 10kHz: ±0.5 dB

Adjustment Location: AUDIO and MAIN boards

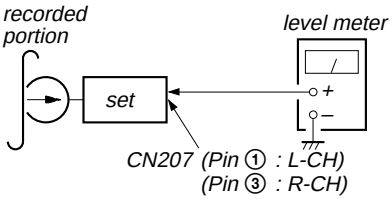
Record Level Adjustment DECK B

Procedure:

1. Mode: record


Pin ⑥ (L-CH) of IC1501 on the main board.
Pin ㊲ (R-CH) of IC1501 on the main board.
315 Hz, 50 mV (–23.8 dB)
AF OSC
attenuator
600 Ω
set
blank tape
CS-123
Pin ② (GND) of CN207 on the main board.

2. Mode: Playback



Confirm playback the signal recorded in step 1 become adjustable limits as follows.

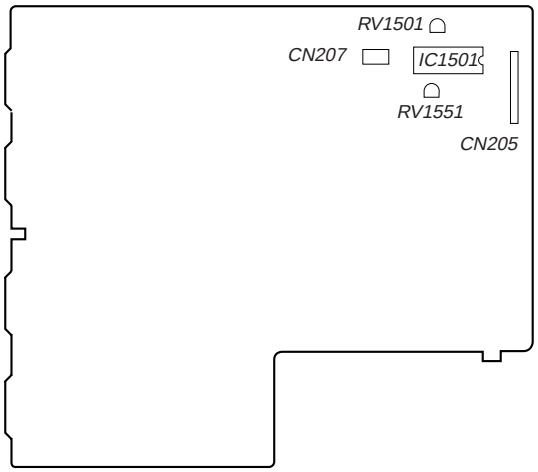
If these levels do not adjustable limits, adjustment the RV1501 (L-CH) and RV1551 (R-CH) on the main board to repeat steps 1 and 2.

Adjustable limits:

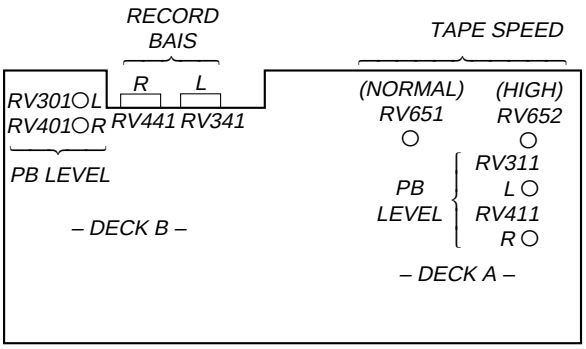
CN207 PB level: 47.3 to 53.1 mV (–24.3 to –23.3 dB)

Adjustment Location: MAIN board

[MAIN BOARD] (Component Side)



[AUDIO BOARD] (Conductor Side)



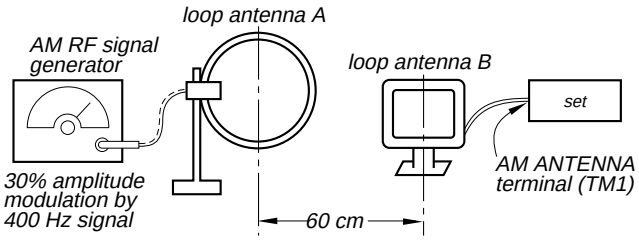
TUNER SECTION | 0dB=1µV

(HCD-FR1: AEP, UK, German model only)

Note: As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

AM Section Adjustment

Setting:



AM Tuned Level Adjustment

Band: AM or MW

Procedure:

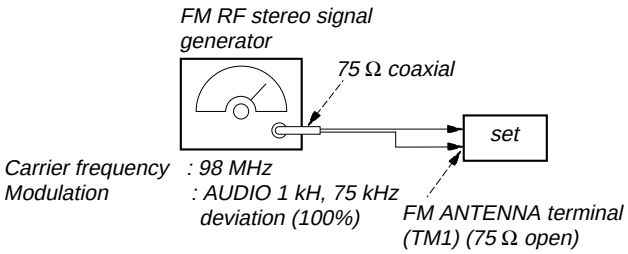
1. Set the output of SSG so that the input level of the set becomes 55 dB.
2. Tune the set to 999 kHz.
3. Adjust RV41 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location : TCB board

FM Section Adjustment

Note: This adjustment should be performed after the AM Tuned Level Adjustment due to the same adjustment element.

Setting:


FM RF stereo signal generator
75 Ω coaxial
set
Carrier frequency : 98 MHz
Modulation : AUDIO 1 kH, 75 kHz deviation (100%)
FM ANTENNA terminal (TM1) (75 Ω open)

FM Tuned Level Adjustment

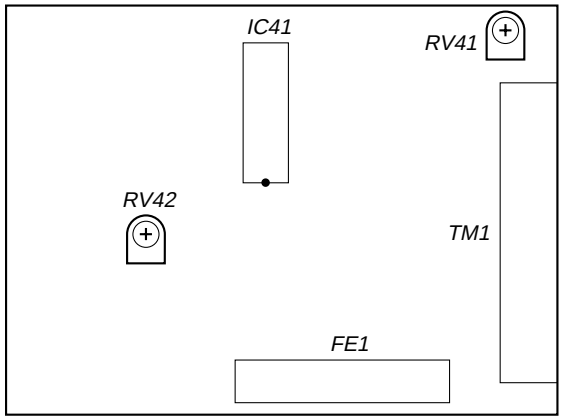
Band: FM

Procedure:

1. Supply a 25dBµ 98 MHz signal from the ANTENNA terminal.
2. Tune the set to 98 MHz.
3. If the TUNED indicator does not light, adjust RV42 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location: TCB board

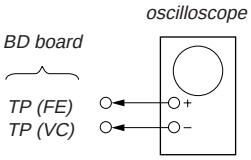
[TCB BOARD] (Component Side)



CD SECTION

Note :

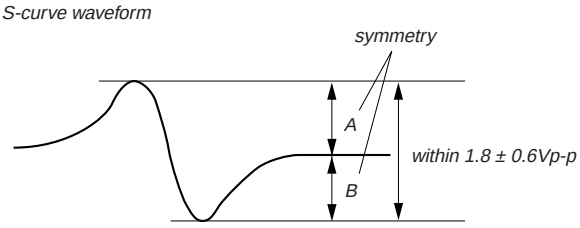
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.



S Curve Check

Procedure :

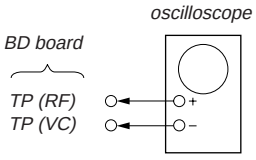
1. Press the POWER button to turn ON the power .
2. Open the front cover, and press the CD PLUS1 button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the POWER button to turn OFF the power.
6. Connect the oscilloscope to TP (FE) of the BD board.
7. Connect CN404 pin ② of the MAIN board and the ground (CN404 pin ① or ③) with a lead wire.
8. Press the POWER button to turn ON the power.
9. The first track will be played back automatically. When the CHECK button is pressed, "S JI" will be displayed on the fluorescent indicator tube, and focus search will be repeated.
10. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 1.8 ± 0.6 Vp-p.



11. Turn OFF the power, and remove the lead wire connected at step 7.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

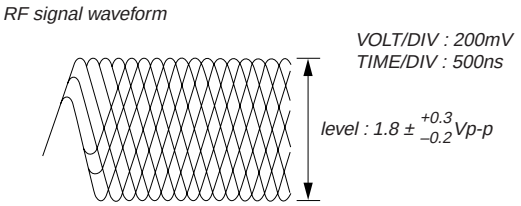
RF Level Check



Procedure :

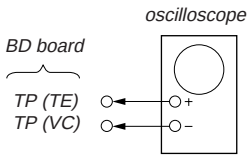
1. Press the POWER button to turn ON the power.
2. Open the front cover, and press the CD PLUS1 button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the POWER button to turn OFF the power.
6. Connect the oscilloscope to TP (RF) of the BD board.
7. Connect CN404 pin ② of the MAIN board and the ground (CN404 pin ① or ③) with a lead wire.
8. Press the POWER button to turn ON the power.
9. Playback the fifth track of the disc.
10. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
11. Turn OFF the power, and remove the lead wire connected at step 7.

Note : A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



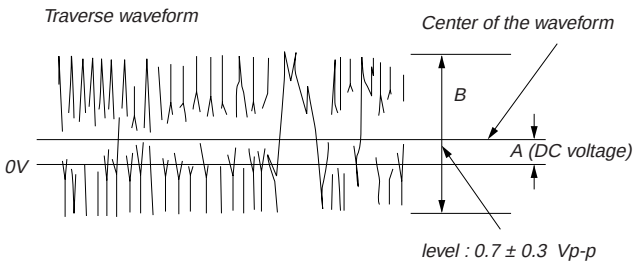
E-F Balance (Traverse) Check

The procedure for this checking method differs for when a general remote control unit is used and not used.

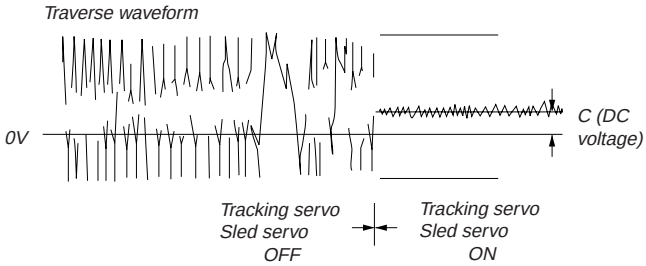


When a general remote commander is used:

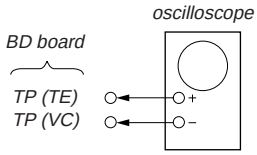
1. Press the POWER button to turn ON the power.
2. Open the front cover, and press the CD PLUS1 button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the POWER button to turn OFF the power.
6. Connect the oscilloscope to TP (TE) of the BD board.
7. Connect CN404 pin ② of the MAIN board and the ground (CN404 pin ① or ③) with a lead wire.
8. Press the POWER button to turn ON the power.
9. Playback the fifth track of the disc.
10. Press the 3 button on the remote commander. (The tracking servo and the sledding servo are turned OFF.)
11. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
Confirm the following :
A/B x 100 = less than ± 10%



12. Press the 8 button on the remote control unit. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 11.

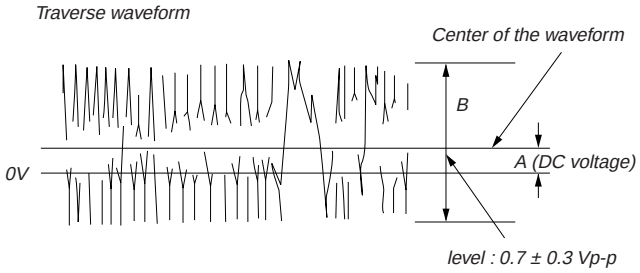


13. Turn OFF the power, and remove the lead wire connected at step 7.

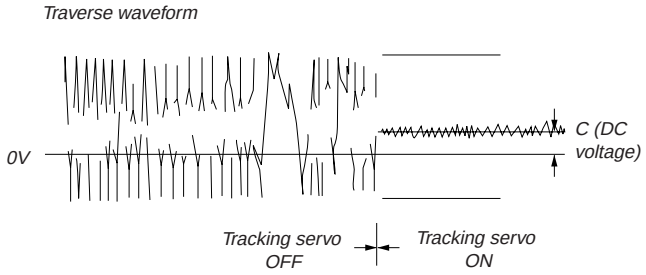


When a general remote commander is not used:

1. Solder lead wires to TP (DVDD) and TP (TOFF) on the BD board severally.
2. Connect the oscilloscope to TP (TE) of the BD board.
3. Press the POWER button to turn ON the power.
4. Open the front cover, and press the CD PLUS1 button.
5. Set the disc (YEDS-18) into the "PLUS ONE" slit.
6. Close the front cover, and chuck the disc.
7. Playback the fifth track of the disc.
8. Short-circuit the lead wire connected at step 1. (The tracking servo is turned OFF)
9. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 10%



10. Disconnect the lead wire short-circuited at step 8. (The tracking servo is turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 8.

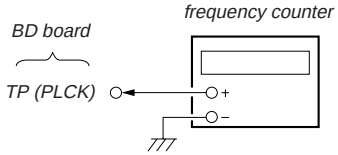


11. Turn OFF the power, and remove the lead wire connected at step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect the frequency counter to TP (PLCK) of the BD board.



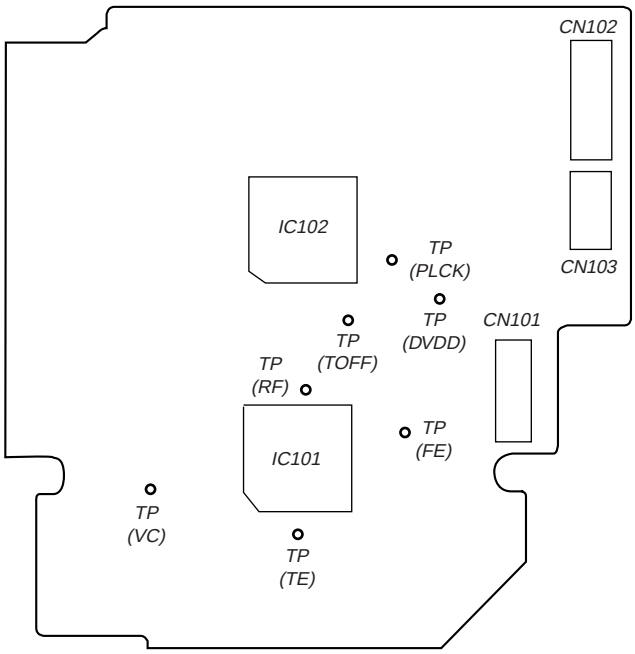
2. Press the POWER button to turn ON the power.
3. Open the front cover, and press the CD PLUS1 button.
4. Set the disc (YEDS-18) into the "PLUS ONE" slit.
5. Close the front cover, and chuck the disc.
6. Playback the fifth track of the disc.
7. Confirm that reading on frequency counter is 4.3218 MHz ± 30 kHz.

About RV402 on the MAIN board

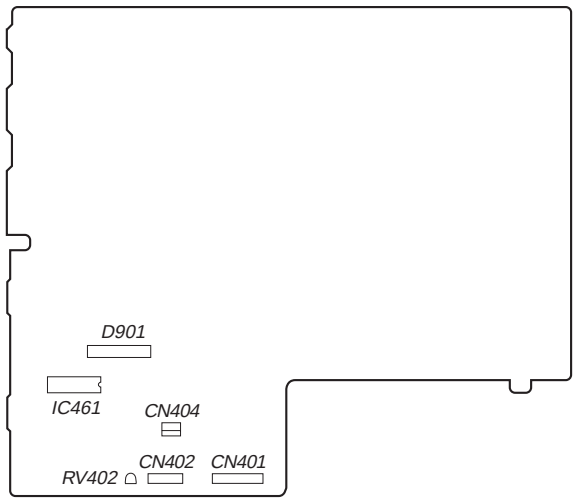
RV402 of the MAIN board requires no adjustments. Please note that it should be dixed to mechanical center position when you moved and do not know origin position.

Adjustment Location :

[BD BOARD] — CONDUCTOR SIDE —

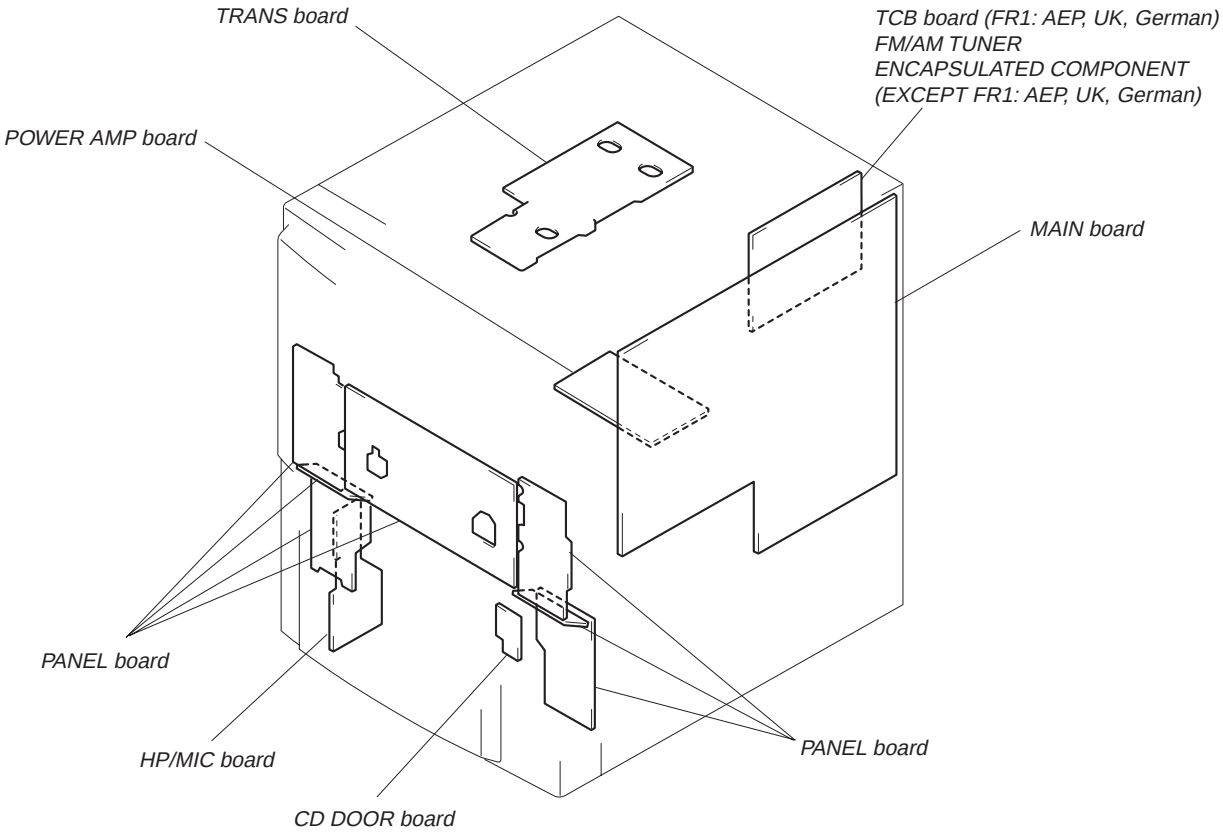


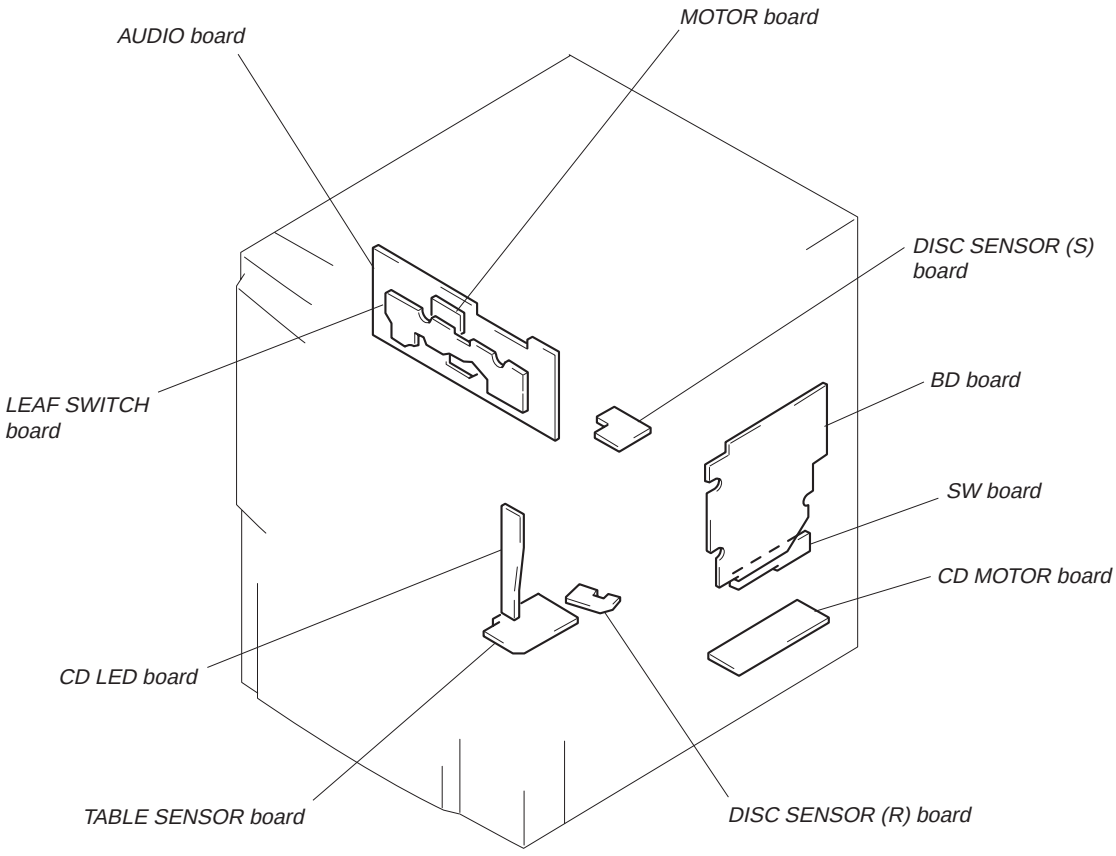
[MAIN BOARD] — COMPONENT SIDE —



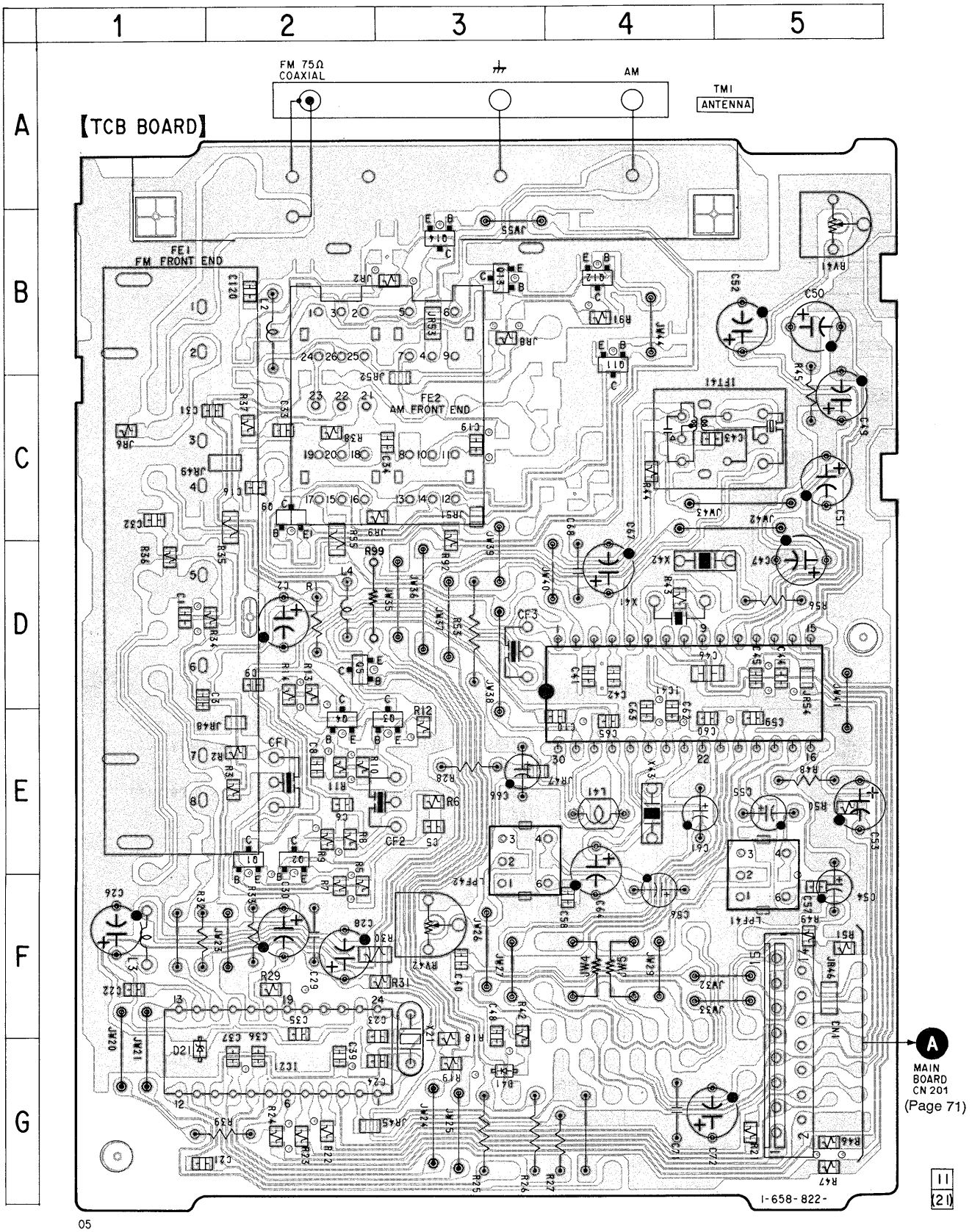
SECTION 6
DIAGRAMS

• **Circuit Board Location**





6-1. PRINTD WIRING BOARD –TUNER Section – (FR1: AEP, UK, G)



• **Semiconductor Location**

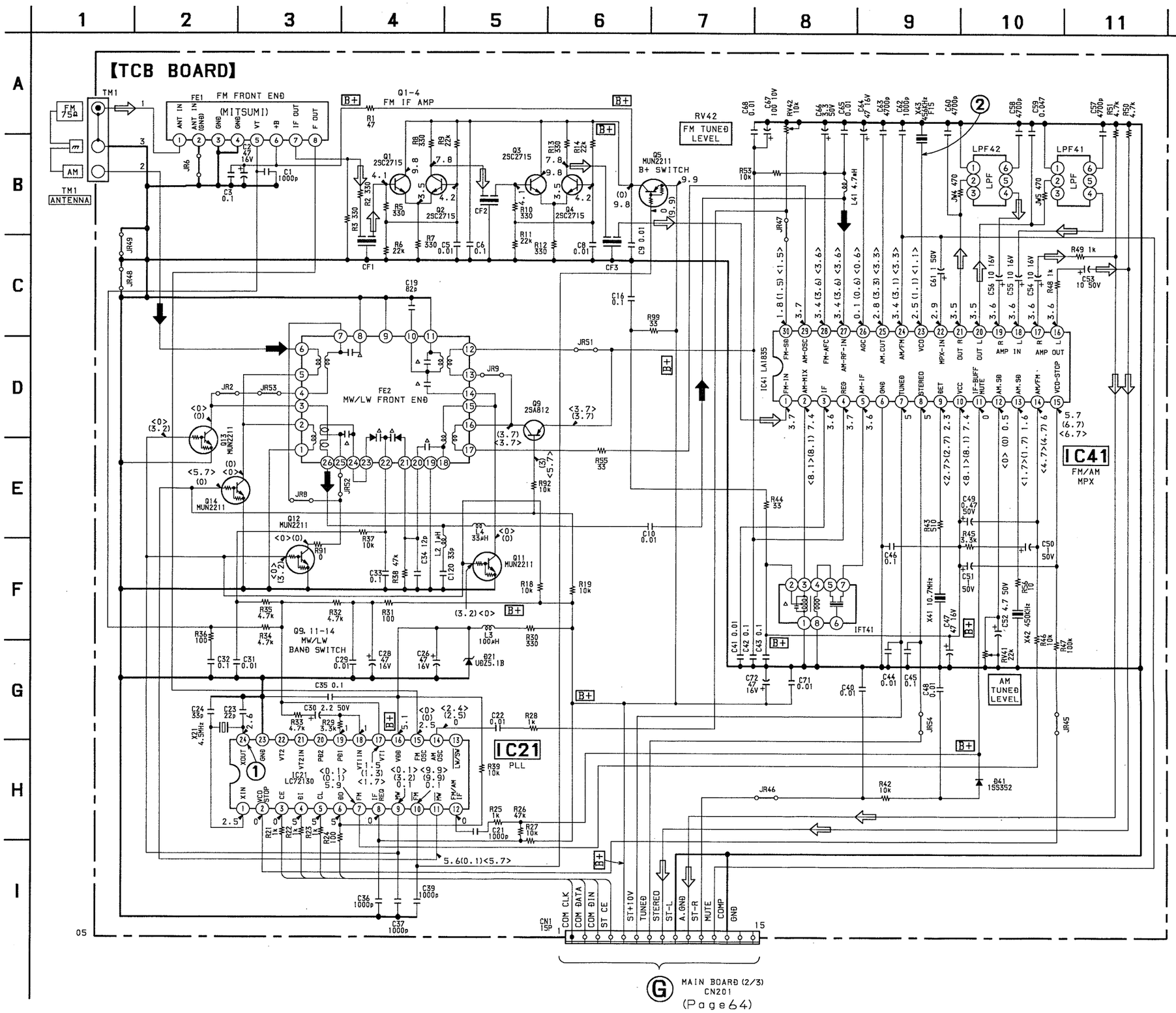
Ref. No.	Location	Ref. No.	Location
D21	G-1	Q3	E-3
D41	G-3	Q4	E-2
		Q5	D-2
IC21	G-2	Q9	C-2
IC41	D-4	Q11	B-4
		Q12	B-4
Q1	E-2	Q13	B-3
Q2	E-2	Q14	B-3

Note on Printed Wiring Board:

- ⟷ : parts extracted from the component side.
- △ : internal component.
- Abbreviation
  G : German model

6-2. SCHEMATIC DIAGRAM – TUNER Section – (FR1: AEP, UK, G)

• See page 81 for IC Block Diagrams. • See page 80 for Waveforms.

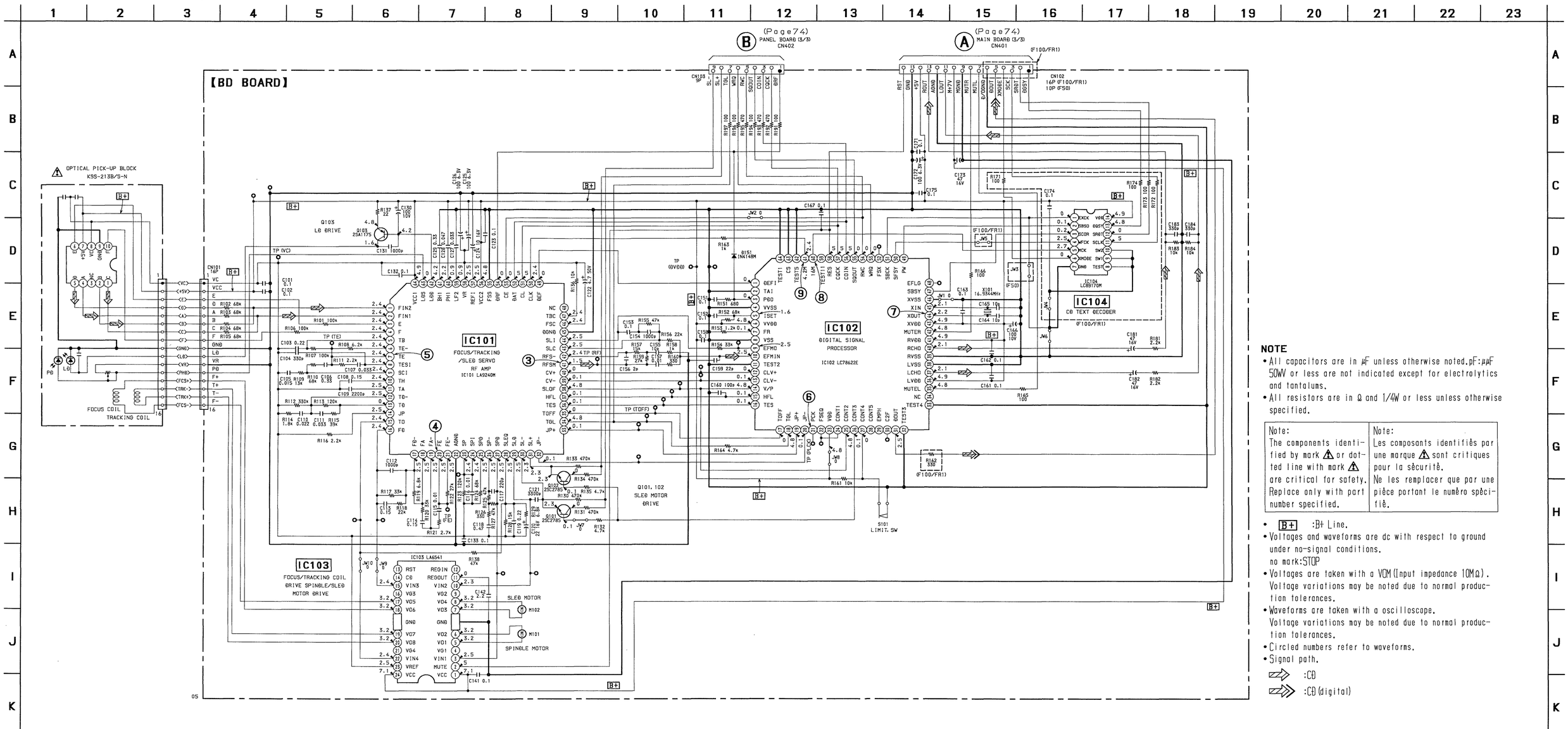


NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ) : MW
  < > : LW
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM

6-3. SCHEMATIC DAIGRAM – CD Section –

• See page 82 for IC Block Diagrams. • See page 80 for Waveforms.



NOTE

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ :B+ Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions. no mark:STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.

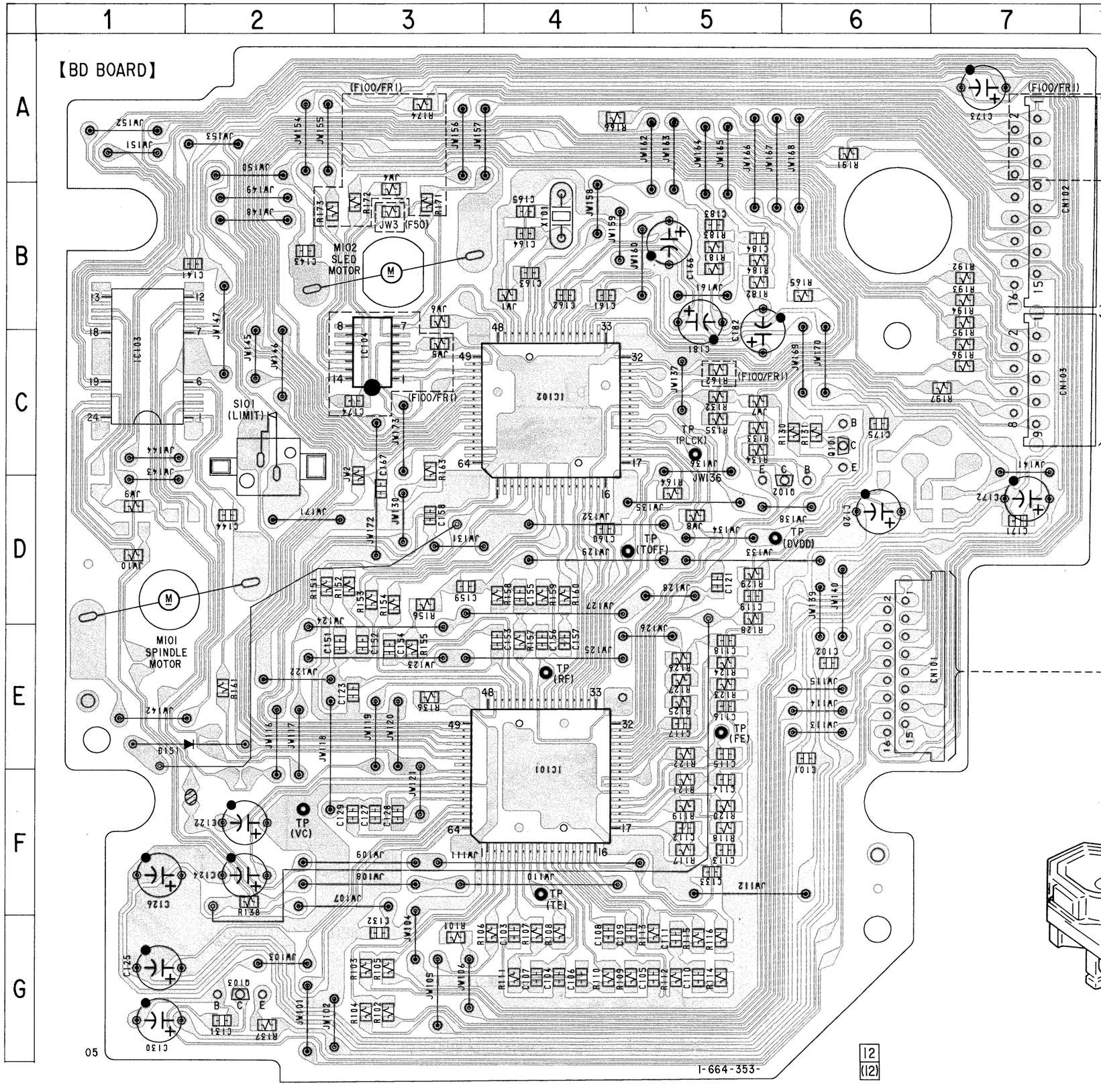
:CD

:CD (digital)

6-4. PRINTED WIRING BOARD – CD Section –

• See page 44 for Circuit Boards Location.

【BD BOARD】

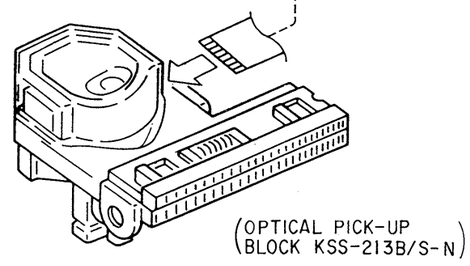


• **Semiconductor Location**

Ref. No.	Location
IC101	E-4
IC102	C-4
IC103	C-1
IC104	C-3
Q101	C-6
Q102	D-6
Q103	G-2

Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ▒▒ : Pattern from the side which enables seeing.
- ⬭ : Solder bridge.



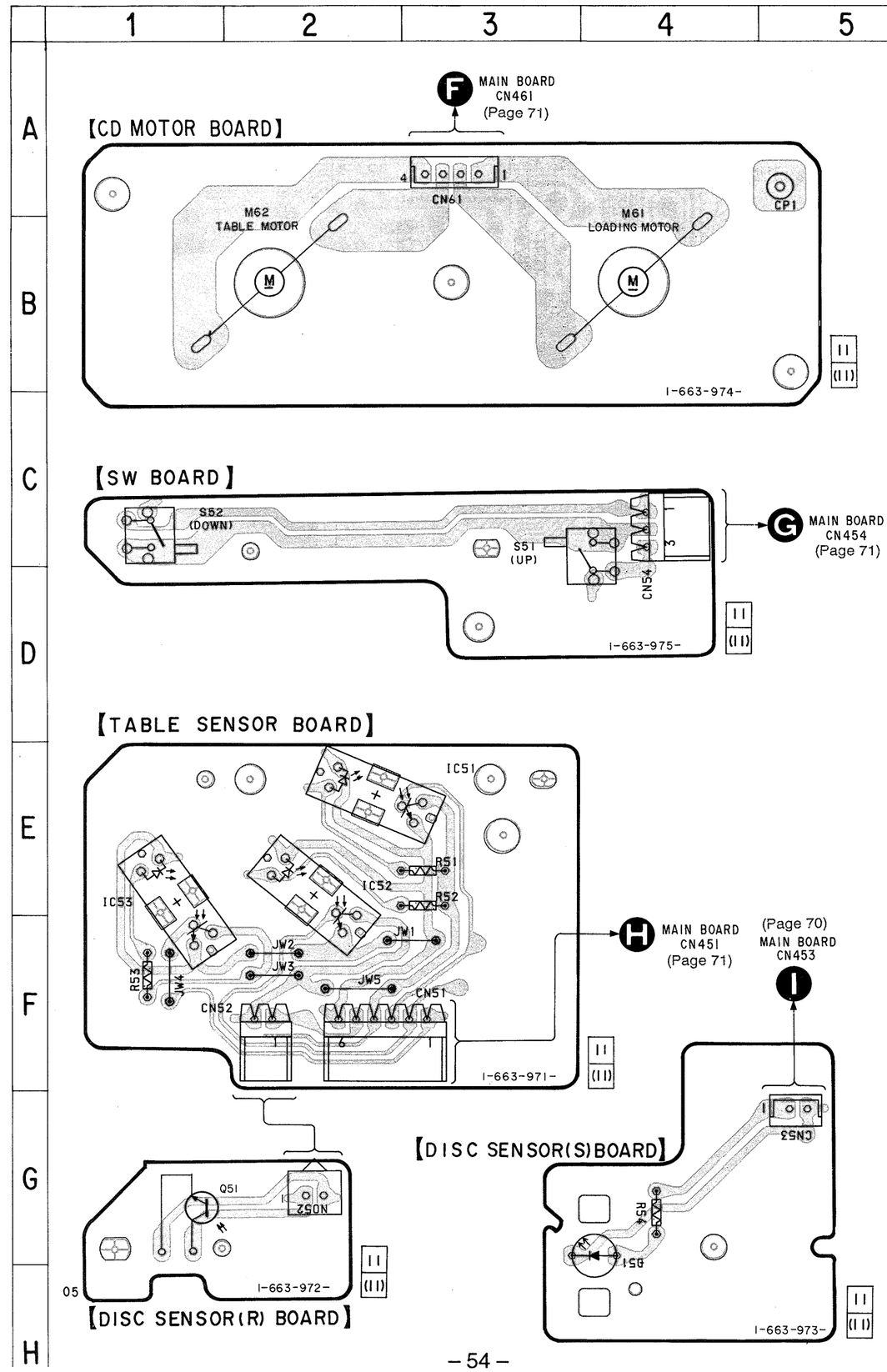
(OPTICAL PICK-UP
BLOCK KSS-213B/S-N)

6-5. PRINTED WIRING BOARDS – CD MOTOR Section –

• See page 44 for Circuit Boards Location.

• Semiconductor Location

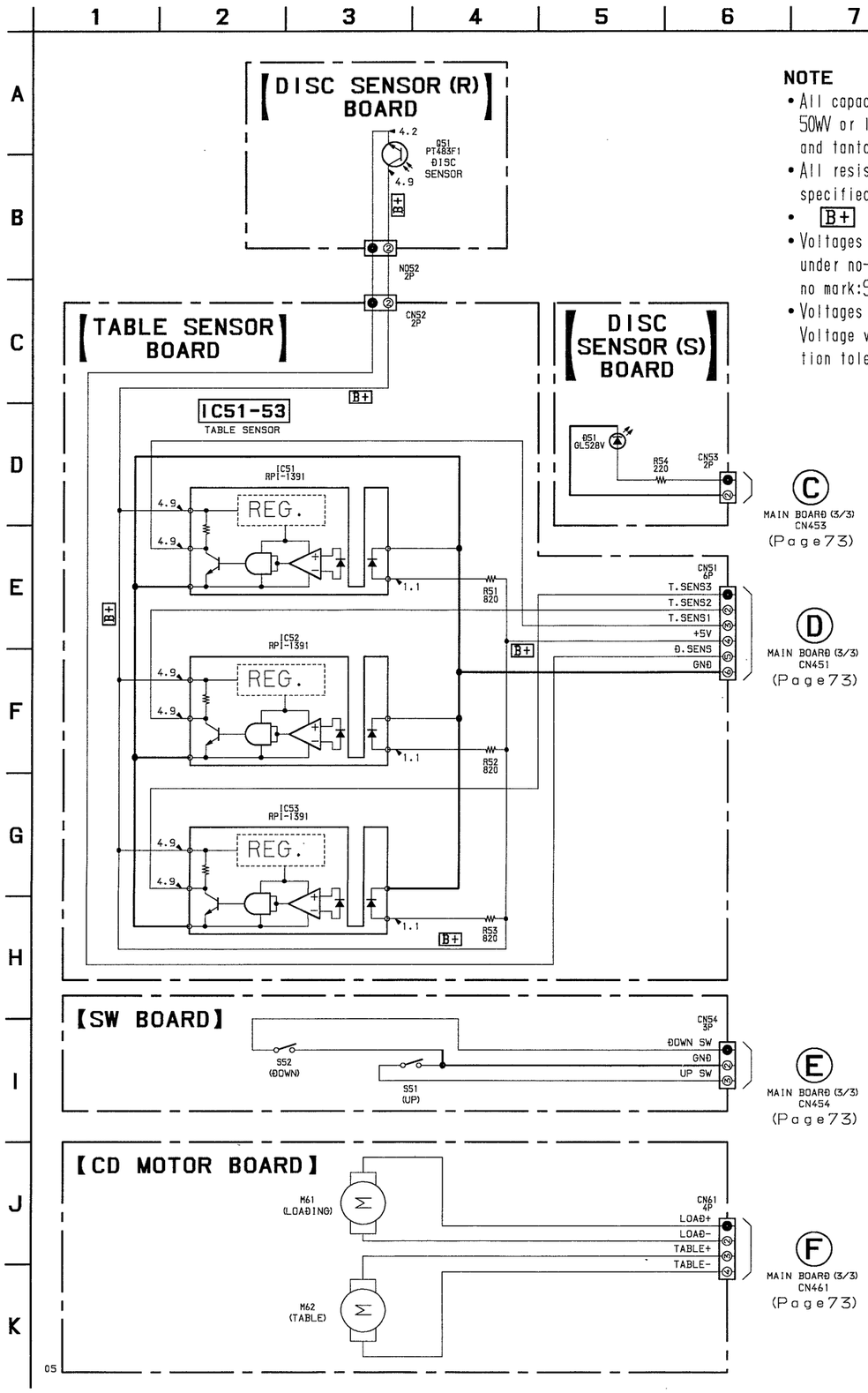
Ref. No.	Location
D51	G-4
IC51	E-2
IC52	E-2
IC53	E-1
Q51	G-1



Note on Printed Wiring Board:

• o——— : parts extracted from the component side.

6-6. SCHEMATIC DIAGRAM – CD MOTOR Section –



NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- B+ : B+ Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

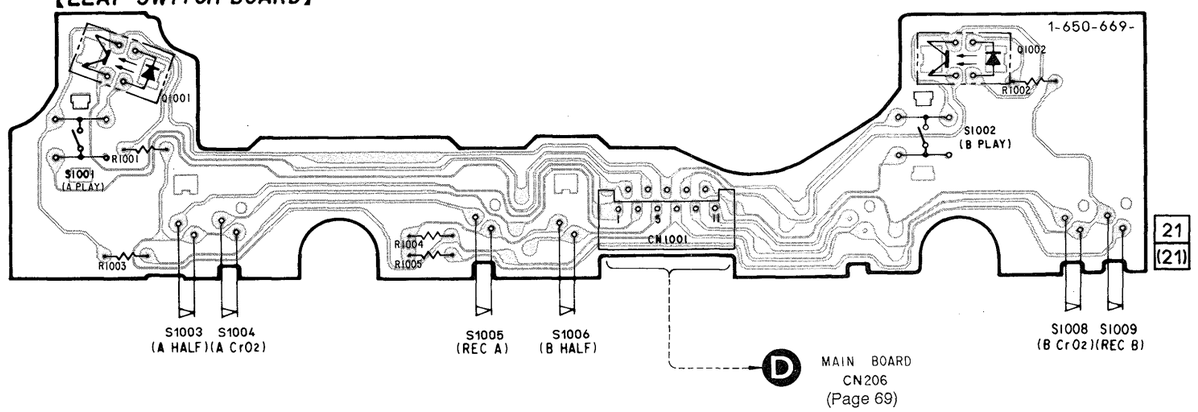
6-7. PRINTED WIRING BOARDS – DECK Section –

• See page 44 for Circuit Boards Location.

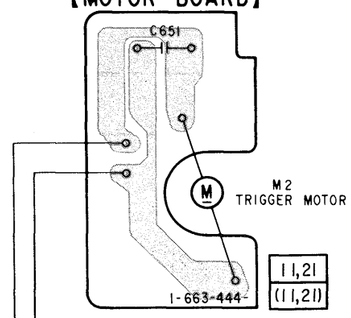
• **Semiconductor Location**

Ref. No.	Location
IC601	H-3
IC602	G-4
IC611	H-9
Q621	H-6
Q622	H-6
Q623	H-5
Q651	F-9
Q1001	B-2
Q1002	B-6

【LEAF SWITCH BOARD】

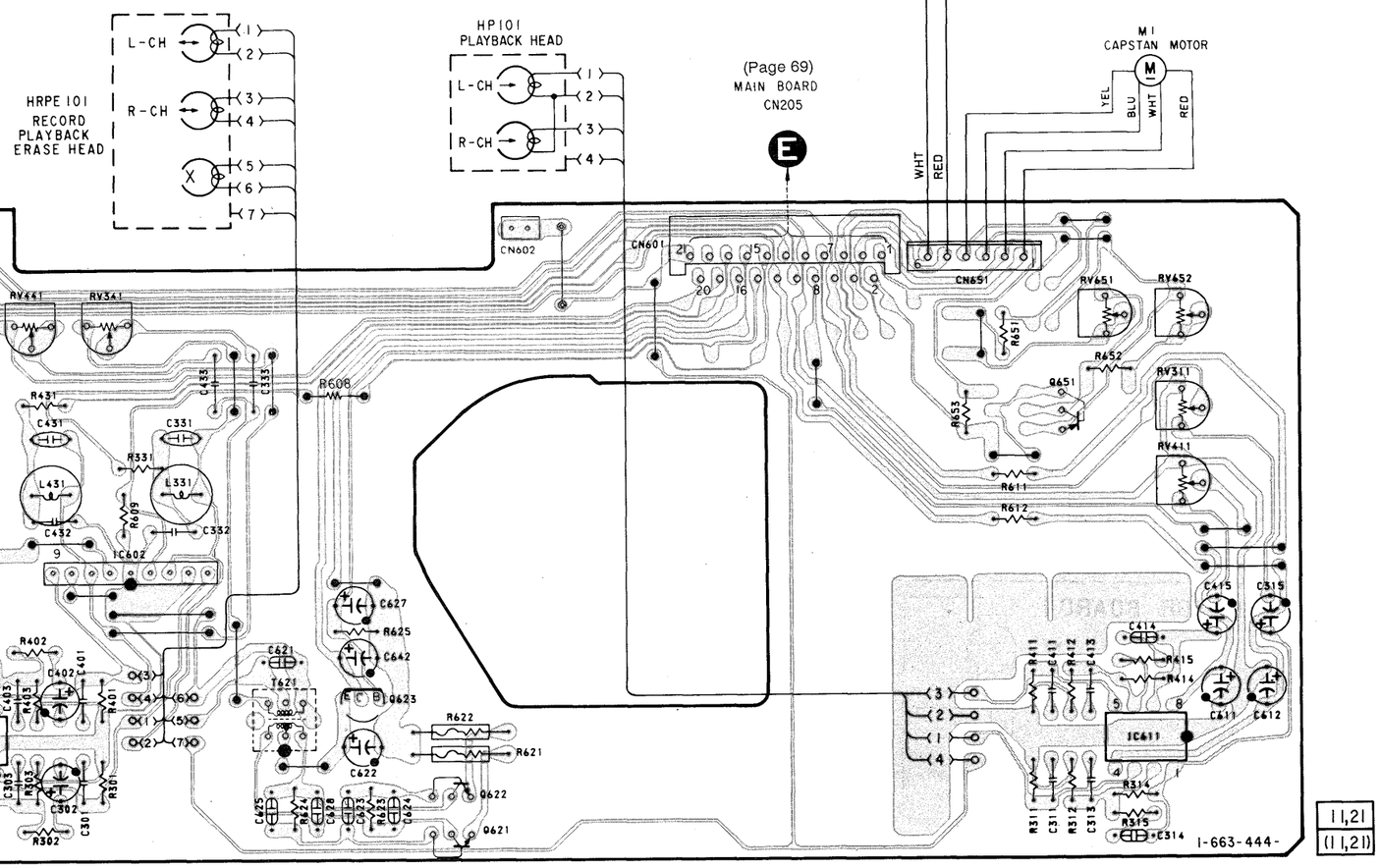


【MOTOR BOARD】



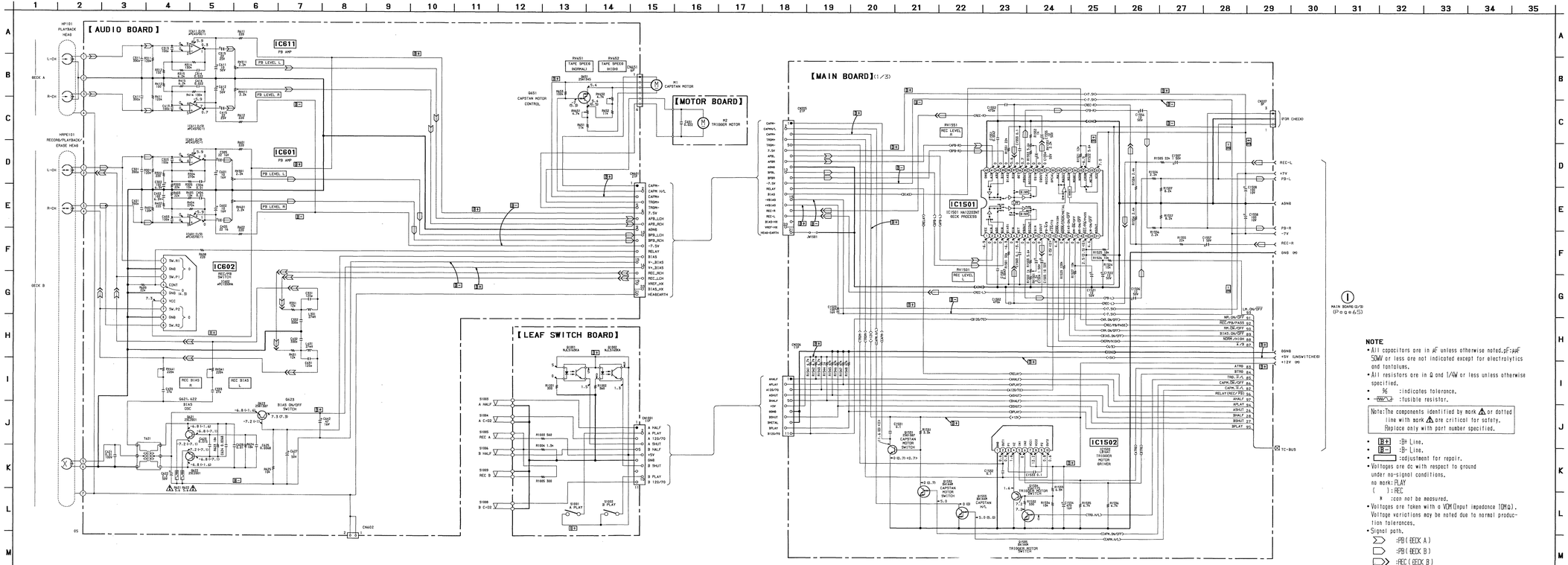
Note on Printed Wiring Board:

• ○—— : parts extracted from the component side.



6-8. SCHEMATIC DIAGRAM – DECK Section –

• See page 83, 84 for IC Block Diagrams.



NOTE

- All capacitors are in μF unless otherwise noted. pF: μF. 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.
- -NW- : fusible resistor.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- B+ : B+ Line.
- B- : B- Line.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground under no-signal conditions.
  no mark: PLAY
  ( ): REC
  * : can not be measured.
- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  F : PB (DECK A)
  E : PB (DECK B)
  D : REC (DECK B)

6-9. SCHEMATIC DIAGRAM – MAIN/POWER Section –

• See page 83, 84 for IC Block Diagrams. • See page 80 for Waveforms.

NOTE

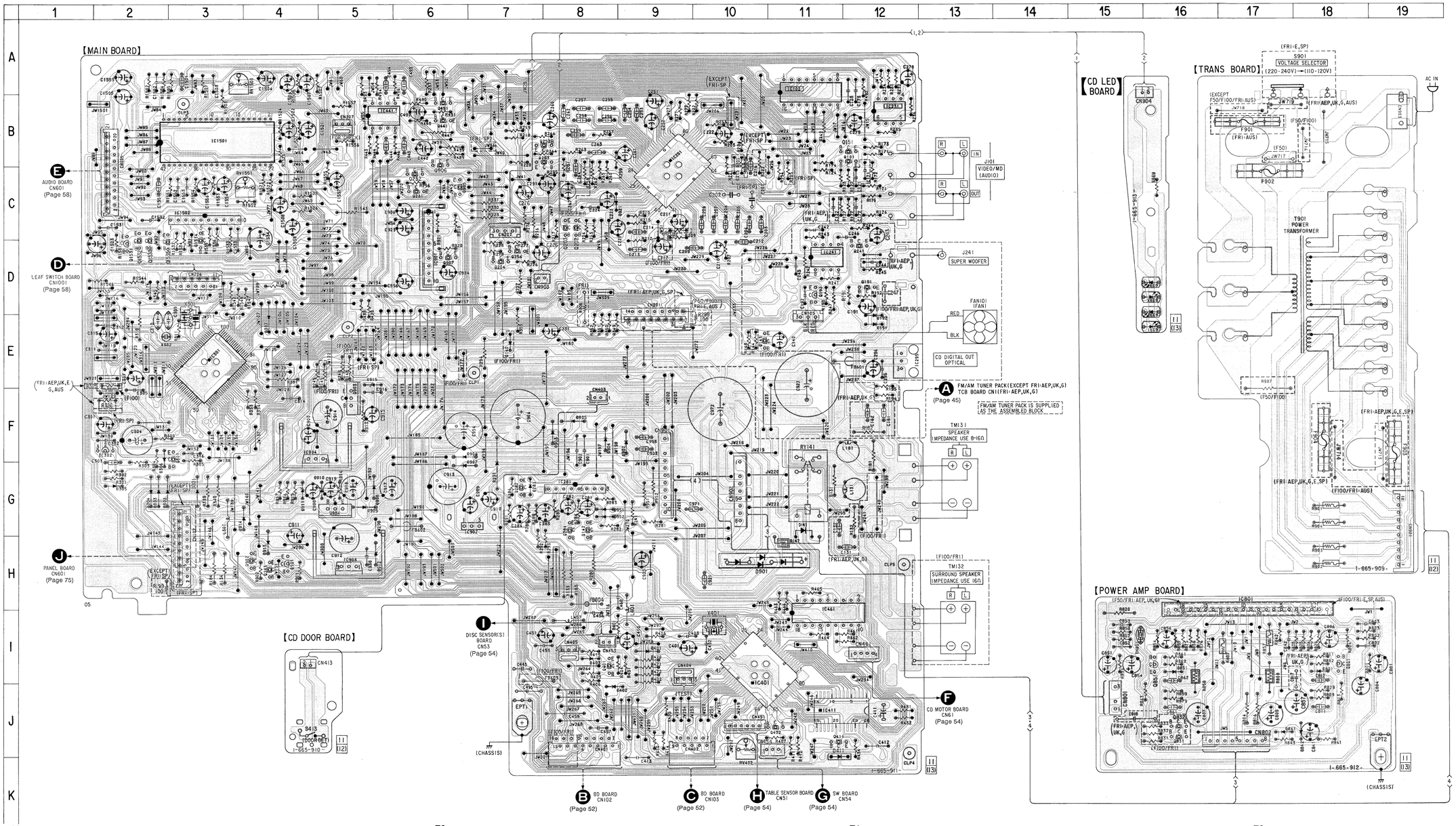
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- -WW- : fusible resistor.
- ▭ : panel designation.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ Line.
- B– : B– Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  - no mark : FM
  - ( ) : CD
  - [ ] : PB (DECK A)
  - < > : PB (DECK B)
  - 《 》 : REC (DECK B)
  - * : can not be measured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Abbreviation
  - CND: Canadian model.
  - G : German model.
  - AUS: Australian model.
  - SP : Singapore model.
- Signal path.
  - ⇨ : FM
  - ⇨≫ : VIDEO
  - ▷ : PB (DECK B)
  - ▷> : REC (DECK B)
  - ⇨ (hatched) : CD

6-10. PRINTED WIRING BOARDS – MAIN/POWER Section –

• See page 44 for Circuit Boards Location.


【MAIN BOARD】
【CD DOOR BOARD】
【CD LED BOARD】
【TRANS BOARD】
【POWER AMP BOARD】
AUDIO BOARD CN601 (Page 58)
LEAF SWITCH BOARD CN1001 (Page 58)
PANEL BOARD CN601 (Page 75)
DISC SENSOR(S) BOARD CN53 (Page 54)
BD BOARD CN102 (Page 52)
BD BOARD CN103 (Page 52)
TABLE SENSOR BOARD CN51 (Page 54)
SW BOARD CN54 (Page 54)
CD MOTOR BOARD CN61 (Page 54)
FM/AM TUNER PACK(EXCEPT FR1-AEP,UK,G) TCB BOARD CN1(FR1-AEP,UK,G) (Page 45)
FM/AM TUNER PACK IS SUPPLIED AS THE ASSEMBLED BLOCK
J101 VIDEO/MD (AUDIO)
J241 SUPER WOOFER
FAN101 (FAN)
CD DIGITAL OUT OPTICAL
TM131 SPEAKER IMPEDANCE USE 8-16Ω
TM132 SURROUND SPEAKER IMPEDANCE USE 16Ω
S901 VOLTAGE SELECTOR (220-240V)→(110-120V)
AC IN
T901 POWER TRANSFORMER
F901
F902
(CHASSIS)

• Semiconductor Location

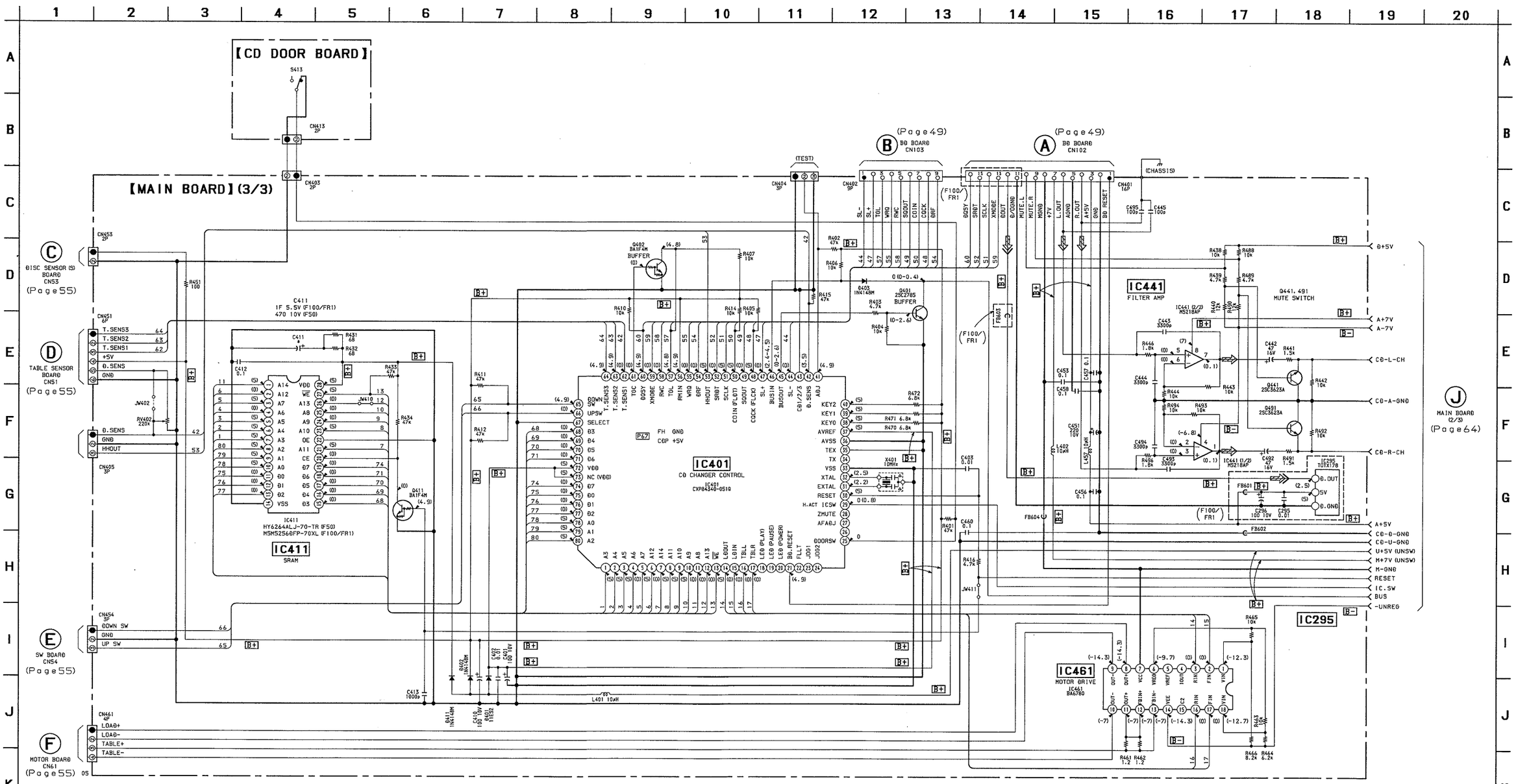
Ref. No.	Location	Ref. No.	Location
D140	E-7	IC401	I-10
D141	G-11	IC411	J-11
D191	E-12	IC441	B-5
D192	E-12	IC461	I-11
D281	G-7	IC801	H-17
D291	G-7	IC901	D-6
D301	G-3	IC902	G-7
D302	G-2	IC903	H-5
D303	G-2	IC904	F-4
D304	G-2	IC1501	B-3
D305	G-2	IC1502	C-3
D306	F-2		
D307	E-4	Q101	B-12
D391	E-16	Q142	G-8
D392	D-16	Q143	E-10
D393	D-16	Q151	B-12
D394	D-16	Q191	D-12
D401	I-9	Q192	D-11
D402	J-8	Q202	C-8
D403	I-8	Q203	C-8
D411	K-11	Q204	D-7
D801	I-18	Q231	C-6
D841	J-17	Q232	C-6
D842	J-18	Q241	D-12
D851	I-16	Q252	B-8
D901	H-10	Q253	B-8
D902	F-9	Q254	D-7
D903	F-8	Q281	G-8
D904	F-8	Q282	G-7
D905	F-8	Q283	H-4
D906	F-6	Q301	F-3
D907	G-6	Q401	I-8
D908	G-5	Q402	J-11
D909	G-5	Q411	J-11
D910	G-5	Q441	B-6
D911	G-4	Q491	B-6
D912	H-5	Q801	I-18
D913	H-4	Q831	J-16
D914	G-3	Q832	J-16
D915	E-5	Q851	I-16
D921	C-8	Q901	H-4
D951	G-8	Q902	H-4
D952	G-8	Q903	F-5
		Q904	G-5
IC102	A-11	Q905	C-6
IC201	C-9	Q906	C-6
IC231	B-12	Q907	D-6
IC241	D-11	Q1531	D-2
IC281	G-8	Q1532	D-2
IC295	E-12	Q1533	D-2
IC301	E-3	Q1534	D-3
IC302	F-2	Q1535	D-2

Note on Printed Wiring Board:

- ⟐——: parts extracted from the component side.
- ——: parts extracted from the conductor side.
- △: internal component.
- Abbreviation
  - CND : Canadian model
  - G : German model
  - SP : Singapore model
  - AUS : Australian model

6-11. SCHEMATIC DIAGRAM – MAIN (3/3) Section –

• See page 84 for IC Block Diagrams. • See page 80 for Waveforms.



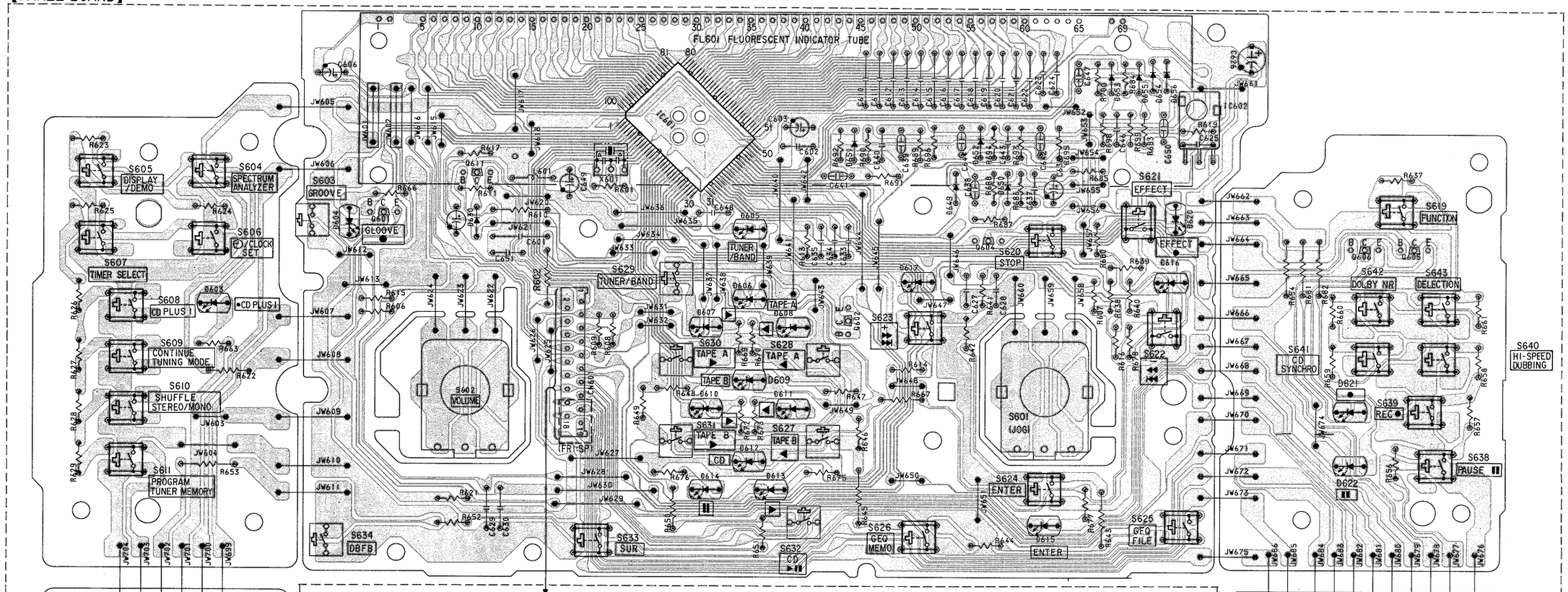
NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ :internal component.
- B+ :B+ Line.
- B- :B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (deturned) conditions.
  no mark:FM
  ( ):CD
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  :CD
  :CD (digital)

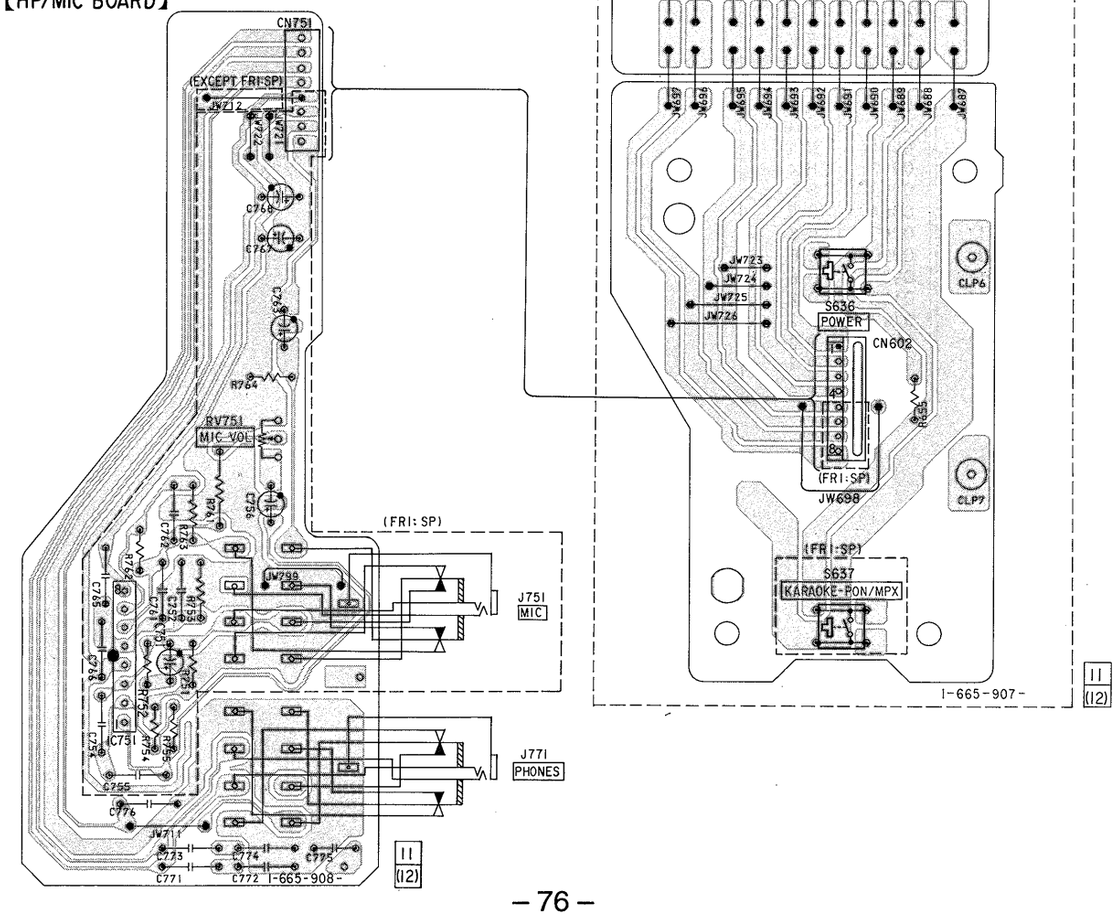
6-12. PRINTED WIRING BOARDS – PANEL Section –

• See page 44 for Circuit Boards Location.

【PANEL BOARD】



【HP/MIC BOARD】



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D601	I-2	D630	B-4
D602	H-2	D649	B-8
D603	C-2	D650	B-8
D604	B-3	D651	B-7
D605	B-6	D652	B-8
D606	C-6	D653	A-9
D607	C-6	D654	A-9
D608	C-6	D655	A-9
D609	C-6	D656	A-9
D610	D-6		
D611	D-6	IC601	B-6
D612	D-6	IC602	A-9
D613	D-6	IC751	I-7
D614	D-6		
D615	E-8	Q601	B-3
D616	C-9	Q602	C-7
D617	C-7	Q604	B-8
D620	B-9	Q605	B-11
D621	D-10	Q606	B-11
D622	D-10	Q611	B-4

Note on Printed Wiring Board:

- o—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- △ : internal component.
- Abbreviation
  SP : Singapore model

6-13. SCHEMATIC DIAGRAM – PANEL Section –

• See page 80 for Waveforms.

【PANEL BOARD】

【HP/MIC BOARD】

FL601
FLUORESCENT INDICATOR TUBE

IC601
DISPLAY CONTROL
TMP87CK75F-6541

IC602
SIRCS

IC751
MIC AMP

S602 VOLUME

S601 JOG

CN751
4P (EXCEPT FR1:SP)
8P (FR1:SP)

CN602
4P (EXCEPT FR1:SP)
8P (FR1:SP)

CN601
15P (EXCEPT FR1:SP)
19P (FR1:SP)

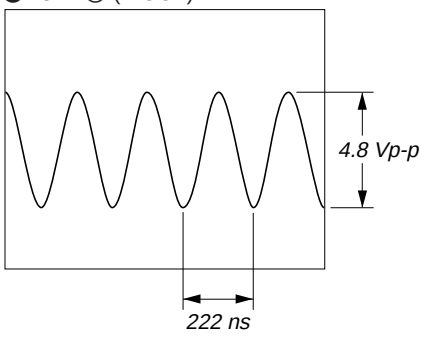
MAIN BOARD (2/3)
CN102
(Page66)

- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ :internal component.
- ▭ :panel designation.
- B+ :B+ Line.
- B- :B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  in service mode.
  in playback mode.
  no mark: FM
  * :can not be measured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Abbreviation
  SP :Singapore model.

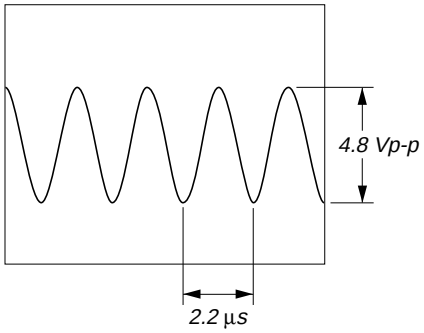
• Waveforms

– TUNER Section –

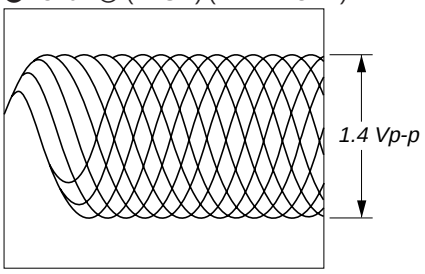
❶ IC21 ㉔ (X OUT)



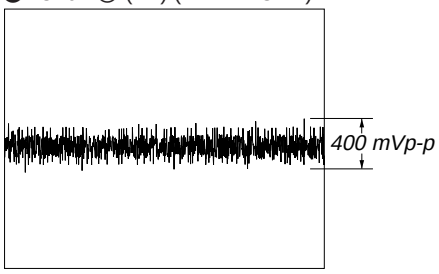
❷ IC41 ㉓ (VCO)



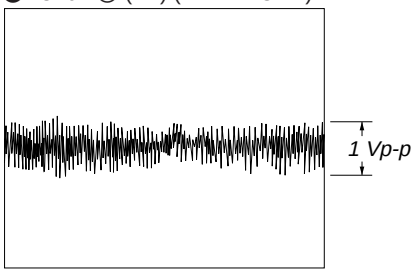
❸ IC101 ㊶ (RFSM) (PLAY MODE)



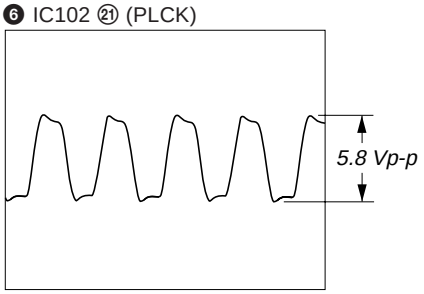
❹ IC101 ⑳ (FE) (PLAY MODE)



❺ IC101 ⑦ (TE) (PLAY MODE)

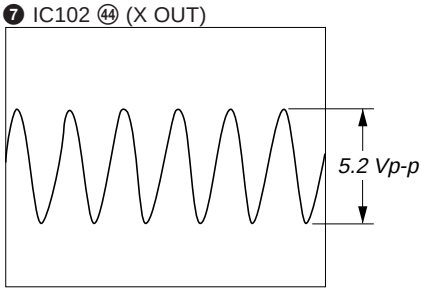


❻ IC102 ㉑ (PLCK)



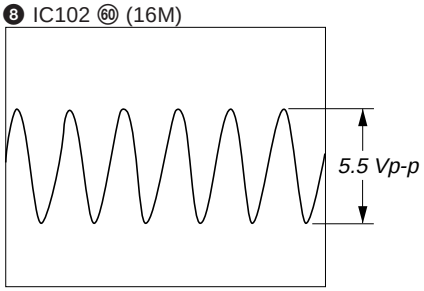
4.32 MHz

❼ IC102 ㊹ (X OUT)



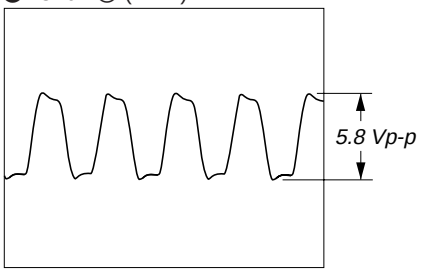
33.867 MHz

❽ IC102 ㊿ (16M)



33.867 MHz

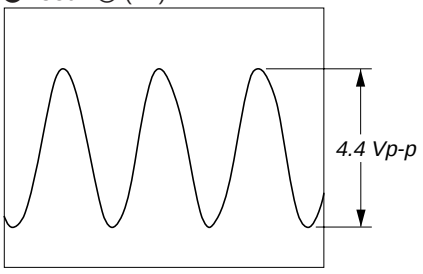
❾ IC102 ㊶ (4.2M)



4.23 MHz

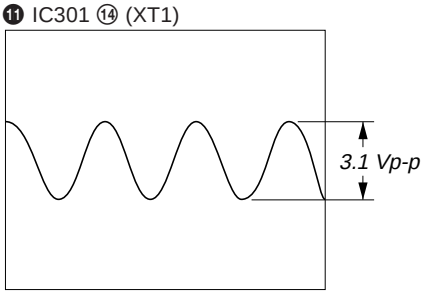
– MAIN Section –

❿ IC301 ⑪ (X1)



5 MHz

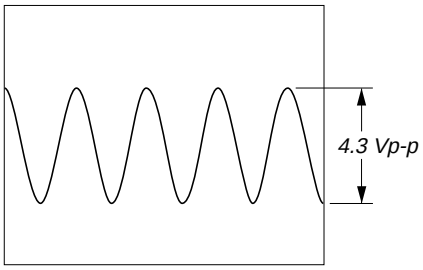
⓫ IC301 ⑭ (XT1)



32.768 kHz

– PANEL Section –

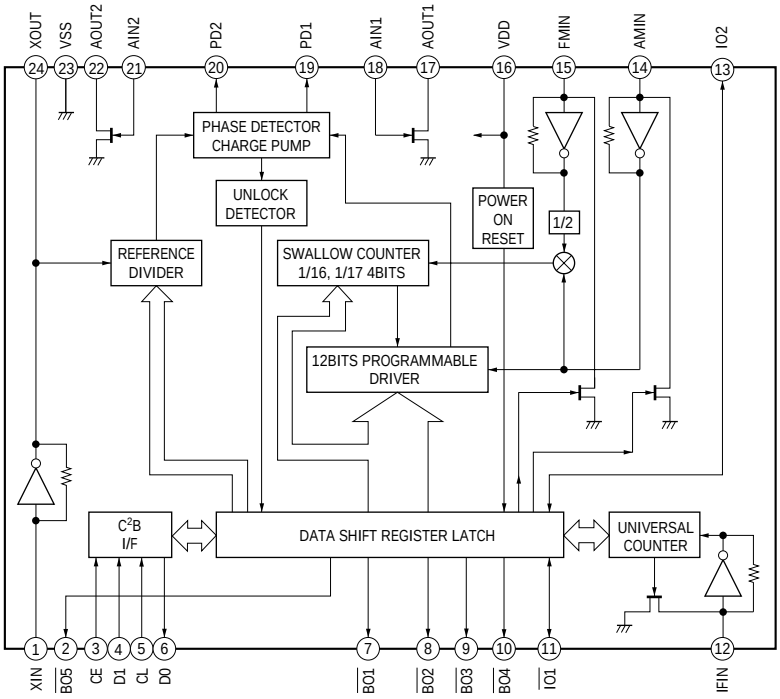
❶ IC21 ㉔ (X OUT)



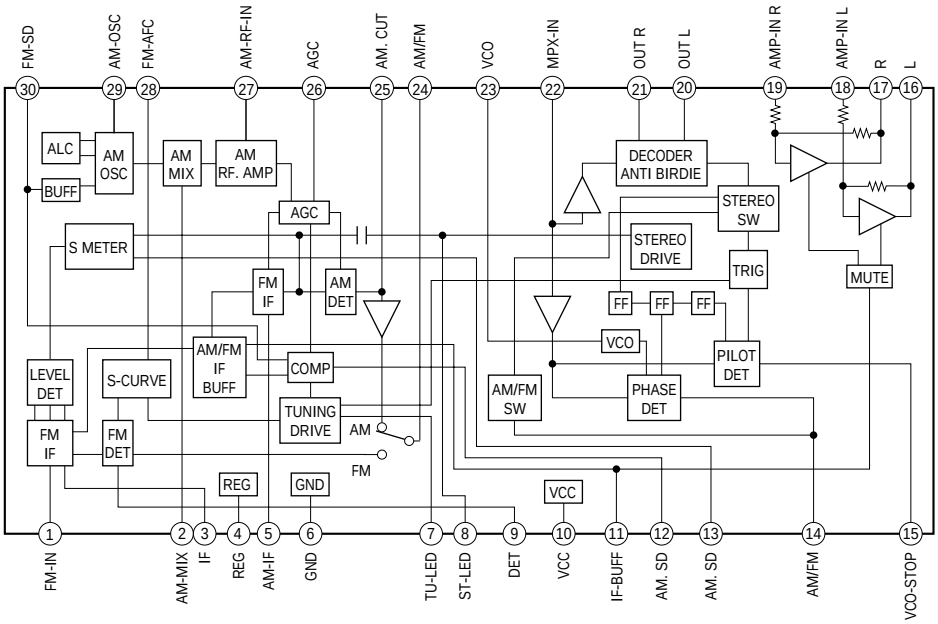
8 MHz

• IC Block Diagrams
– TUNER Section –

IC21 LC72130

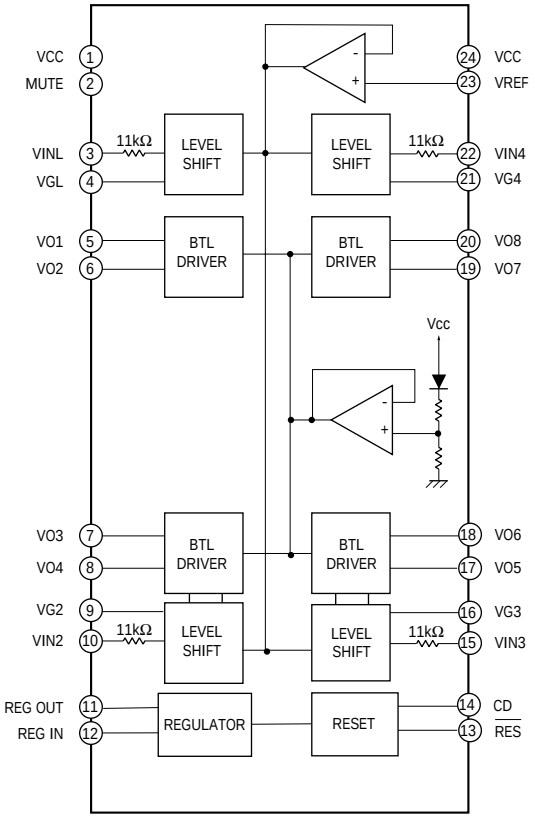


IC41 LA1835

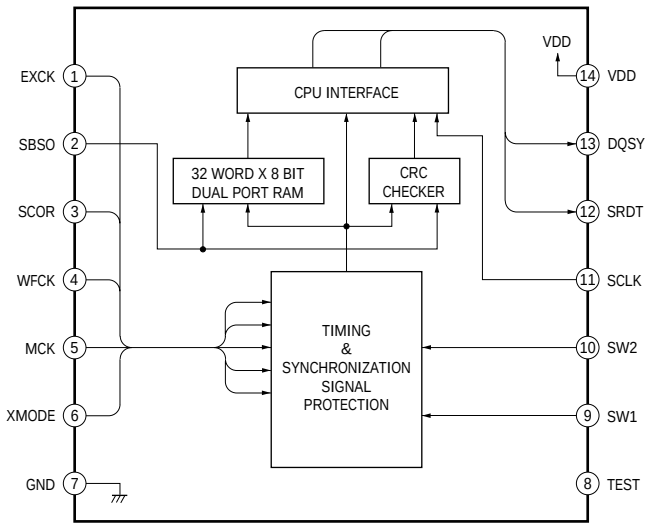


– CD Section –

IC103 LA6541

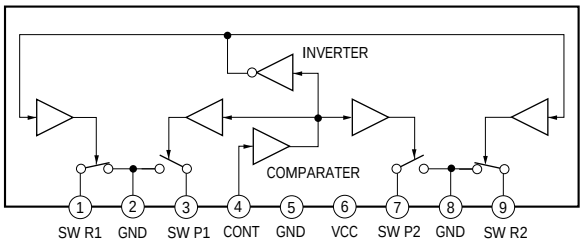


IC104 LC89170M



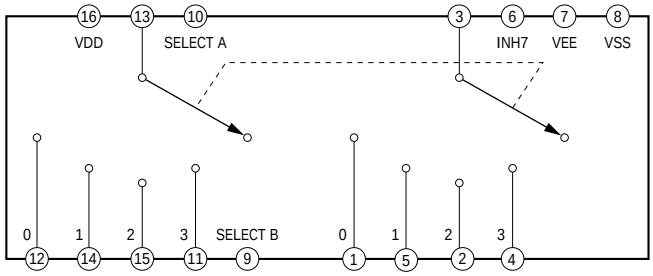
– DECK Section –

IC602 µPC1330HA

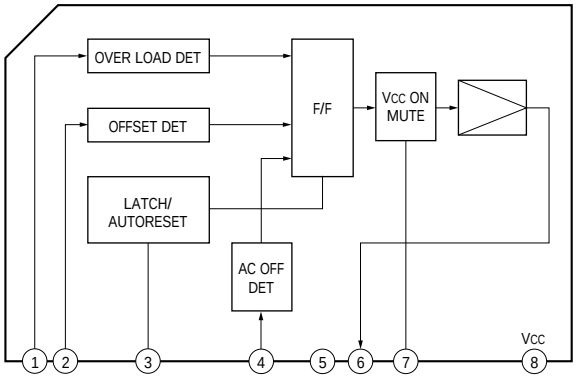


– MAIN Section –

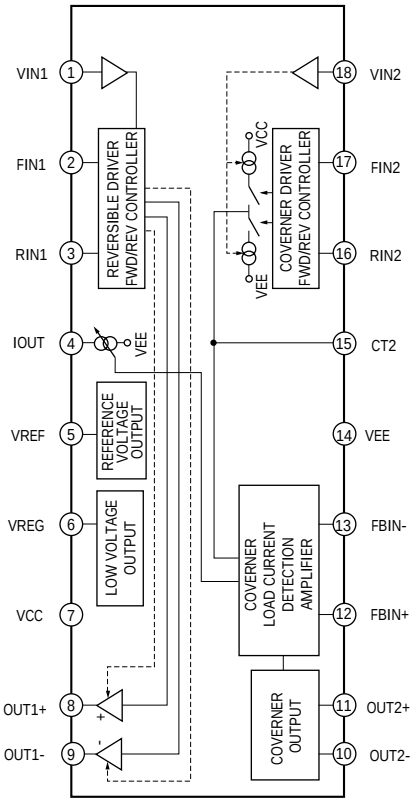
IC102 MC14052BCP



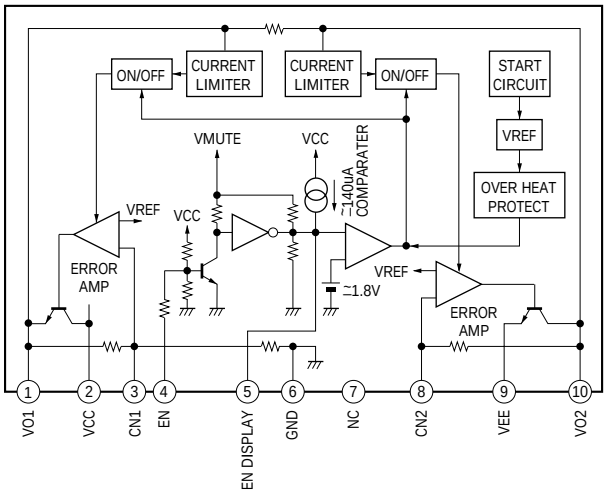
IC281 µPC1237HA



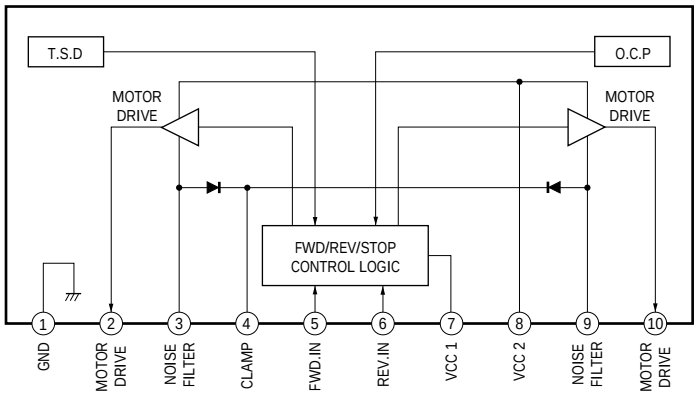
IC461 BA6780



IC901 LA5617



IC1502 LB1641



6-14. IC PIN FUNCTION DESCRIPTION

BD BOARD IC101 LA9240M (FOCUS/TRACKING/SLED SERVO)

Pin No.	Pin Name	I/O	Function
1	FIN2	I	Connected to the pick-up photodiode Added with FIN1 to create RF signal, subtracted with FIN1 to create FE signal
2	FIN1	I	Connected to the pick-up photodiode
3	E	I	Connected to the pick-up photodiode Subtracted with F to create TE signal
4	F	I	Connected to the pick-up photodiode
5	TB	I	DC component of the TE signal is input
6	TE–	I	Connects the TE signal gain setting resistor between TE pins
7	TE	O	TE signal output
8	TESI	I	TES (Track Error Sense) comparator input. The TE signal is band-passed and input
9	SCI	I	Shock detection input
10	TH	I	Tracking gain time constant setting
11	TA	O	TA amplifier output
12	TD–	I	Creates a tracking phase compensation constant between TD and VR pins
13	TD	O	Tracking phase compensation setting
14	JP	I	Tracking jump signal (kick pulse) amplitude setting
15	TO	O	Tracking control signal output
16	FD	O	Focusing control signal output
17	FD–	I	Creates a focusing phase compensation constant between FD and FA pins
18	FA	O	Creates a focusing phase compensation constant between FD- and FA- pins
19	FA–	I	Creates a focusing phase compensation constant between FA and FE pins
20	FE	O	FE signal output
21	FE–	I	Connects the FE signal gain setting resistor between TE pins
22	AGND	–	Analog signal Ground
23	SP	O	Single end output of CV+ and CV- pin signal
24	SPI	I	Spindle amplifier input
25	SPG	I	Gain setting resistor is connected when the spindle 12cm mode
26	SP–	I	Works together with the SPD pin to connect to the spindle phase compensation constant
27	SPD	O	Spindle control signal output
28	SLEQ	I	Sled phase compensation constant is connected
29	SLD	O	Sled control signal output
30	SL–	I	Sled feeding signal is input from the microprocessor
31	SL+	I	Sled feeding signal is input from the microprocessor
32	JP–	I	Tracking jump signal is input from the DSP
33	JP+	I	Tracking jump signal is input from the DSP
34	TGL	I	Tracking gain control signal is input from the DSP Gain becomes low when TGL is “H”
35	TOFF	I	Tracking off control signal is input from the DSP Tracking becomes off when TOFF is “H”
36	TES	O	Outputs TES signal to the DSP
37	HFL	O	HFL (High Frequency Level) is used to determine whether the main beam is positioned on a pit or a mirror

Pin No.	Pin Name	I/O	Function
38	SLOF	I	Sled servo off control input
39	CV–	I	CLV error signal is input from the digital signal processor
40	CV+	I	CLV error signal is input from the digital signal processor
41	RFSM	O	RF output
42	RFS–	I	Works together with the RFSM pin to set the RF gain and the 3T compensation constant for the EFM signal
43	SLC	O	SLI (Slice Level Control) is output to control a data slice level of the RF waveform by the digital signal processor
44	SLI	I	Input pin for controlling a data slice level by the digital signal processor
45	DGND	–	Digital Ground
46	FSC	O	Focus search smoothing capacitor output
47	TBC	I	TBC (Tracking Balance Control) sets a EF balance variable range
48	NC	–	Not used
49	DEF	O	Defect detection output for a disc
50	CLK	I	Reference clock input The 4.23 MHz of the digital signal processor is input
51	CL	I	Microprocessor command clock input
52	DAT	I	Microprocessor command data input
53	CE	I	Microprocessor command chip enable input
54	DRF	O	DRF (Defect RF) outputs a RF level detection
55	FSS	I	FSS (Focus Search Select) is a switching pin for the focus search mode (±search/+search for a reference voltage)
56	VCC2	–	Servo system and digital system VCC
57	RFFI	I	Reference voltage bus control is connected
58	VR	O	Reference voltage output
59	LF2	I	Constant setting for a disc defect detection
60	PH1	I	Connected to the capacitor for the RF signal peak hold
61	BH1	I	Connected to the capacitor for the RF signal bottom hold
62	LDD	O	APC circuit output
63	LDS	I	APC circuit input
64	VCC1	–	RF system VCC

• Abbreviation
EFM : Eight to Fourteen Modulation
APC : Auto Power Control

BD BOARD IC102 LC78622E (DIGITAL SIGNAL PROCESSOR)

Pin No.	Pin Name	I/O	Function
1	DEFI	I	Defect detection signal (DEF) input (Be sure to connect to 0 when not in use)
2	TAI	I	PLL test input to incorporates a pull-down resistor (Be sure to connect to 0V)
3	PDO	O	PLL phase comparison output for external VCO control
4	VVSS	–	PLL ground for the built-in VCO (Be sure to connect to 0 when not in use)
5	ISET	I	Connected to a current adjusting resistor for the PDO output
6	VVDD	–	Built-in VCO power supply
7	FR	I	Adjusts the VCO frequency range
8	VSS	–	Digital Ground to be sure to connect to 0
9	EFMO	O	Slice level control to EFM signal output
10	EFMIN	I	Slice level control to EFM signal input
11	TEST2	I	Test input to incorporates a pull-down resistor (Be sure to connect to 0V)
12	CLV+	O	Disc motor control output (3-value output available depending on the command)
13	CLV–	O	
14	V/P	O	Rough servo/phase control automatic switching monitor output “H”:rough servo, ‘’L”:phase servo
15	HFL	I	Tracking detection signal input (Schmidt input)
16	TES	I	Tracking error signal input (Schmidt input)
17	TOFF	O	Tracking OFF output
18	TGL	O	Tracking gain switching output (Raises gain when “L”)
19	JP+	O	Track jump control output (3-value output available depending on the command)
20	JP–	O	
21	PCK	O	EFM data playback clock monitor (4.3218 MHz when phase is locked)
22	FSEQ	O	Sync signal detection output (“H” when a sync signal detected from the EFM signal and that generated internally coincide)
23	VDD	–	Digital power supply
24	CONT1	I/O	General purpose output 1. Performs control using a serial data command from the microprocessor (When not in use, connect to 0V by setting to an input or set to an open state by setting to an output)
25	CONT2	I/O	General purpose output 2. Performs control using a serial data command from the microprocessor (When not in use, connect to 0V by setting to an input or set to an open state by setting to an output)
26	CONT3	I/O	General purpose output 3. Performs control using a serial data command from the microprocessor (When not in use, connect to 0V by setting to an input or set to an open state by setting to an output)
27	CONT4	I/O	General purpose output 4. Performs control using a serial data command from the microprocessor (When not in use, connect to 0V by setting to an input or set to an open state by setting to an output)
28	CONT5	I/O	General purpose output 5. Performs control using a serial data command from the microprocessor (When not in use, connect to 0V by setting to an input or set to an open state by setting to an output)

• Abbreviation
PLL : Phase Locked Loop
EFM : Eight to Fourteen Modulation

Pin No.	Pin Name	I/O	Function
29	EMPH	O	Deemphasis monitor The deemphasis disc is being played back when “H”
30	C2F	O	C2 flag output
31	DOUT	O	Digital OUT output (EIAJ format)
32	TEST3	I	Test input Incorporates a pull-down resistor Be sure to connect to 0V
33	TEST4	I	Test input Incorporates a pull-down resistor Be sure to connect to 0V
34	NC	–	Not used Be sure to use it in an open state
35	MUTEL	O	L channel 1-bit DAC L channel mute output
36	LVDD	–	L channel 1-bit DAC L channel power supply
37	LCHO	O	L channel 1-bit DAC L channel output
38	LVSS	–	L channel 1-bit DAC L channel ground Be sure to connect to 0V
39	RVSS	–	R channel 1-bit DAC R channel ground Be sure to connect to 0V
40	RCHO	O	R channel 1-bit DAC R channel output
41	RVDD	–	R channel 1-bit DAC R channel power supply
42	MUTER	O	R channel 1-bit DAC R channel mute output
43	XVDD	–	Power supply for the crystal oscillator
44	XOUT	O	Connected to the 16.9344 MHz crystal oscillator
45	XIN	I	
46	XVSS	–	Ground for the crystal oscillator Be sure to connect to 0V
47	SBSY	O	Sync signal output for the subcode block
48	EFLG	O	C1, C2, single correction, and double correction monitor
49	PW	O	Subcode P, Q, R, S, T, U, W output
50	SFSY	O	Subcode frame sync signal output Rises when the subcode is in a standby
51	SBCK	I	Subcode read clock input Schmidt input (Connect to 0V when not in use)
52	FSX	O	7.35 kHz sync signal output divided from the crystal oscillation
53	WRQ	O	Subcode Q output standby output
54	RWC	I	Read/write control input Schmidt input
55	SQOUT	O	Subcode Q output
56	COIN	I	Command input from the microprocessor
57	CQCK	I	Command input fetching clock input or subcode extracting clock input from SQOUT Schmidt input
58	RES	I	LC78622 reset input Temporarily set to “L” when the power is turned ON
59	TEST11	O	Test output Use it in an open state (Normally, “L” output)
60	16M	O	16.9344 MHz output
61	4.2M	O	4.2336 MHz output
62	TEST5	I	Test input. Incorporates a pull-down resistor. Be sure to connect to 0V
63	CS	I	Chip select input Incorporates a pull-down resistor Be sure to connect to 0V when not in control
64	TEST1	I	Test input Does not incorporates a pull-down resistor Be sure to connect to 0V

Note) Supply the same potential to each power supply pin (VDD, VVDD, LVDD, RVDD, XVDD).

MAIN BOARD IC301 µPD780016YGF-013-3BA (MASTER CONTROL)

Pin No.	Pin Name	I/O	Function
1	TA-MUTE	O	Line mute signal output
2	DBFB-H/L	O	DBFB H/L select signal output
3	427-LAT	O	Latch signal output for IC201 (M62427FP)
4	K-CON-LAT	O	Not used
5	K-CON-ON	O	
6	F-RELAY	O	Main speaker relay control output (Not used)
7	R-RELAY	O	Surround speaker relay control output (Not used)
8	PL-RELAY	O	Surround speaker relay control output (Not used)
9	TEST	I	Connected ground
10	X2	O	X'tal (5MHz)
11	X1	I	
12	VDD	–	Power supply (+5V)
13	XT2	O	X'tal (32.768 kHz)
14	XT1	I	
15	RESET	I	Reset signal input
16	(INT/IN)	I	Connected ground
17	(INT/IN/OUT)	I	
18	SCOR	O	Subcode data request signal output
19	SOFT-TEST	O	Software test port
20	AC-CUT	I	Reset signal input
21	RDS-INT	I	Serial data transfer clock signal input
22	RDS-DATA	I	Serial data input (Not used)
23	VDD	–	Power supply (+5V)
24	AVDD	I	Analog reference voltage input
25	ADJ	I	CD adjust point port
26	A-SHUT	I	A Deck reel pulse detector
27	B-SHUT	I	B Deck reel pulse detector
28	B-HALF	I	Half detector signal input
29	CLK-CHECK	I	Connected ground
30	SPEC-IN	I	Version select signal input
31	ADJ 2	I	Connected ground
32	DEMO-MODE	I	DEMO H/L select signal input
33	AVSS	–	Ground
34	SQ-DATA-IN	I	Subcode Q data clock input
35	—	–	Not used
36	SQ-CLK	I	Sub code Q data clock input (Not used)
37	SW-ON/OFF	O	Not used
38, 39	FUNC 1, 2	I	Connected ground
40	VSS	–	Ground
41	VOL-LAT	O	Not used
42	PL-LAT	O	
43	COM-DIN	I	Connected ground

Pin No.	Pin Name	I/O	Function
44	COM-DOUT	O	Common serial data output
45	COM-CLK	O	Common serial clock output
46	CD-POWER	O	CD power on signal output (Not used)
47	CD-DATA	O	CD data output (Not used)
48	CD-CLK	O	CD clock output (Not used)
49	MSM-CND	O	DJ effect command output (Not used)
50	MSM-BUSY	I	Busy signal input
51	MSM-LAT	O	Serial latch pulse output (Not used)
52	MSM-NAR	I	NAR signal input (Not used)
53	MSM-CH	O	CH select output (Not used)
54	INPUT-CHANGE	O	GAIN control output
55	1IC-DATA	O	Data output for IC601
56	1IC-CLK	O	Clock output for IC601
57	XRST	O	CD reset signal output (Not used)
58	XLT	O	CD latch signal output (Not used)
59	FOUCUS-SW	O	Focus switching signal output (Not used)
60	TBL-L	O	Table motor control output (Not used)
61	TBL-R	O	
62	TRAY-LED	O	CD tray LED ON/OFF output (Not used)
63	LOAD-OUT	O	Loading motor control signal output (Not used)
64	LOAD-IN	O	
65	ST-CLK	O	Tuner clock output
66	ST-DIN	I	Tuner data input
67	ST-DOUT	O	Tuner data output
68	ST-CE	O	Tuner chip enable output
69	TUNED	I	Tuned detection for tuner
70	STEREO	I	Stereo detection for tuner
71	VSS	–	Ground
72	ST-MUTE	O	Tuner mute signal output
73	SENS2	I	BD Condition signal input
74	SENS	I	
75	DISC-SENS	I	Not used
76	T-SENS	I	CD table detection signal input
77	UPSW	I	Up SW (S201) signal input (Not used)
78	ENC 3	I	Disctray address detect encoder input
79	ENC 2	I	
80	ENC 1	I	
81	OUT-OPEN	I	Out switch signal input
82	CAP-H/N	O	Capstan motor H/N speed select signal output
83	A-TRG	O	Trigger motor control output
84	B-TRG	O	Trigger motor control output
85	TRG-LOW	O	Trigger motor control output
86	CAP-M-ON/OFF	O	Capstan motor ON/OFF signal output

Pin No.	Pin Name	I/O	Function
87	PB-A/B	O	PB Deck A/Deck B select output
88	EQ-H/N	O	Equalizer H/N select output
89	BIAS	O	Bias ON/OFF signal output
90	REC-MUTE	O	REC mute ON/OFF selection output
91	NR-ON/OFF	O	NR ON/OFF signal output
92	R/P-PASS	O	REC/PB/PASS selection output
93	TC-MUTE	O	TC mute ON/OFF selection output
94	A-PLAY-SW	I	Deck A play detect
95	B-PLAY-SW	I	Deck B play detect
96	RELAY	O	REC/PB head selection output for IC602
97	A-HALF	I	Deck A cassette detect
98	POWER	O	POWER ON/OFF signal output
99	SW-F-CON	O	Super woofer mode signal output (Not used)
100	STK-MUTE	O	Power amp ON/OFF signal output

MAIN BOARD IC401 CPX84340-051Q (CD CHANGER CONTROL)

Pin No.	Pin Name	I/O	Function
1-5	A3-A7	O	SRAM address signal output
6	A12	O	SRAM address signal output
7	A14	O	SRAM address signal output
8-11	A11-A8	O	SRAM address signal output
12	A13	O	SRAM address signal output
13	$\overline{WE}$	O	SRAM write enable signal output
14	LDOUT	O	Loading motor out direction signal output
15	LDIN	O	Loading motor in direction signal output
16	TBLL	O	Table motor clock width turn signal output
17	TRLR	O	Table motor cunter clock width turn signal output
18	LED (PLAY)	O	LED()drive signal output
19	LED (PAUSE)	O	LED()drive signal output
20	LED (POWER)	O	LED(power)drive signal output
21	BD. RESET	O	BD section reset signal output
22	FLLT	O	Fluorescent indicator drive IC latch output
23, 24	Jog1, Jog2	I	Rotaly encoder signal input
25	DOOR SW	I	Front cover cloase ditect signal input
26	————	O	No connection
27	AFADJ	O	No connection
28	ZMUTE	O	No connection
29	ICSW	O	Switched +5 V output
30	RESET	I	Reset signal input
31	EXTAL	I	Oscillator connection pin
32	XTAL	I	Oscillator connection pin
33	VSS	–	Ground
34	TX	–	No connection
35	TEX	–	Ground
36	AVSS	–	Ground
37	AVREF	–	+5 V
38-40	KEY0-KEY2	I	Operation key (analog) input
41	TEST	I	Test terminal
42	D. SENS	I	Disk senser (analog) input
43	CD1/2/3	I	CD1/2/3 switch
44	SL–	O	Sled motor output (–)
45	BUSOUT	O	Control bus signal output
46	BUSIN	I	Control bus signal input
47	SL+	O	Sled motor output (+)
48	CQCK	O	Clock signal output
49	SQOUT	I	Sub code reading data input
50	COIN	O	Command data output
51	SCLK	O	Clock signal output for LC89170M(IC104) at BD board. (HCD-F100/FR1 only)
52	SRDT	I	Data input from LC89170M (IC104) at BD board (HCD-F100/FR1 only)
53	HHOUT	O	Plus one LED output
54	DRF	I	DRF (FOK) input
55	WRQ	I	Sub-code synchronizing signal input
56	RMIN	I	SCRCS input
57	TGL	I	Tracking gain control signal input
58	RWC	O	RWC (latch) output
59	XMODE	O	Reset signal output for LC89170M (IC104) at BD board (HCD-F100/FR1 only)

Pin No.	Pin Name I/O		Function
60	DQSY	I	Data synchronizing signal input from LC89170 M (IC104) at BD board (HCD-F100/FR1 only)
61	TGC	O	Tracking gain control signal output
62-64	TSENS1-TSENS3	I	Table sensor input
65	DOWNSW	I	Loading out switch input
66	UPSW	I	Loading in switch input
67	SELECT	I	Operation select signal input
68-71	D3-D6	I/O	SRAM data signal input-output
72	VDD	–	+5V
73	NC (VDD)	–	+5V
74	D7	I/O	SRAM data signal input-output
75-77	D0-D2	I/O	SRAM data signal input-output
78-80	A0-A2	O	SRAM address signal output

PANEL BOARD IC601 TMP87CH75F-6541 (DISPLAY CONTROL)

Pin No.	Pin Name	I/O	Function
1	SEG-35	O	Fluorescent display tube segment signal output
2	V-LOAD	–	–30V for Fluorescent display tube
3-10	LED1-LED8	O	LED driver output
11	VSS	–	Ground
12	X-OUT	O	X'tal (8MHz)
13	X-IN	I	X'tal (8MHz)
14	RESET	I	Reset signal input from master control
15, 16	LED9, LED10	O	LED driver output
17	TEST	I	Connected ground
18	LED 11	O	LED driver output
19	LED 16	O	LED driver output
20-23	LED12-LED15	O	LED driver output
24	VOL-A	I	Rotaly encoder pulse input
25	AU-BUS-IN	I	AU-BUS signal input
26	JOG-A	I	Rotaly encoder pulse input
27	CLOCK	I	Serial clock input from master control
28	DATA	I	Serial data input from master control
29	LED 17	O	LED driver output (Not used)
30	VDD	–	Power supply (+5V)
31	VSS	–	Ground
32	MODEL	I	Connected ground
33-35	KEY1-KEY3	I	Key input
36, 37	LED 18, 19	O	LED driver output
38	AU-BUS-OTP	–	AU-BUS signal output
39	SIRCS	I	Remote commander signal input
40	VOL-B	I	Rotaly encoder pulse input
41	JOG-B	I	Rotaly encoder pulse input
42-45	SPEANA 1-4	I	Spectrum analyzer signal input
46	L + R	I	Spectrum analyzer (high frequency) input
47	LED 20	O	LED driver output
48	VASS	–	Ground
49	VAREF	I	Analog reference voltage input
50	VDD	–	Power supply (+5V)
51-66	GR-1-GR-16	O	Fluorescent display tube gride signal output
67-100	SEG-1-SEG-34	O	Fluorescent display tube segment signal output

SECTION 7
EXPLODED VIEWS

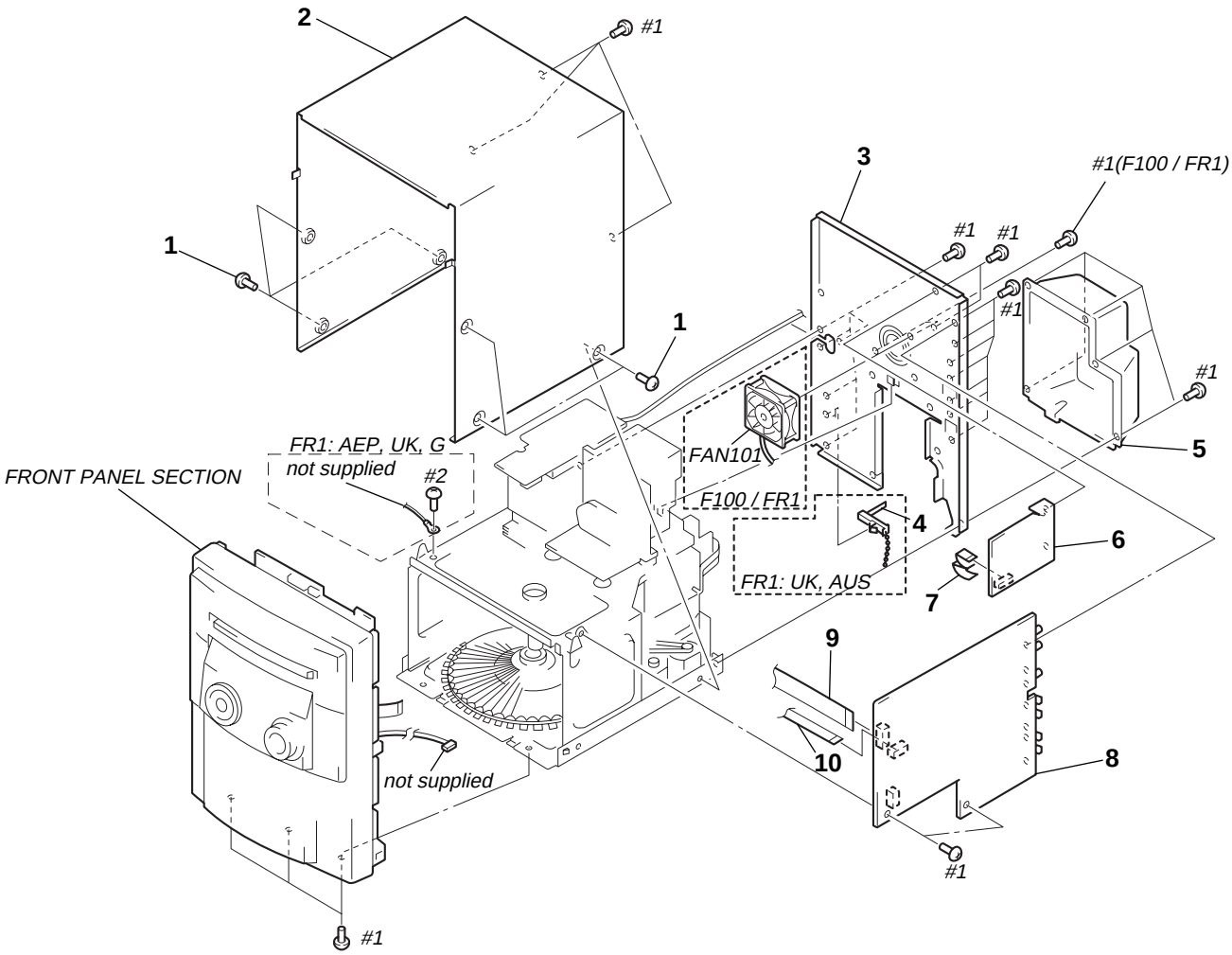
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  CND : Canadian G : German
  SP : Singapore AUS : Australia
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

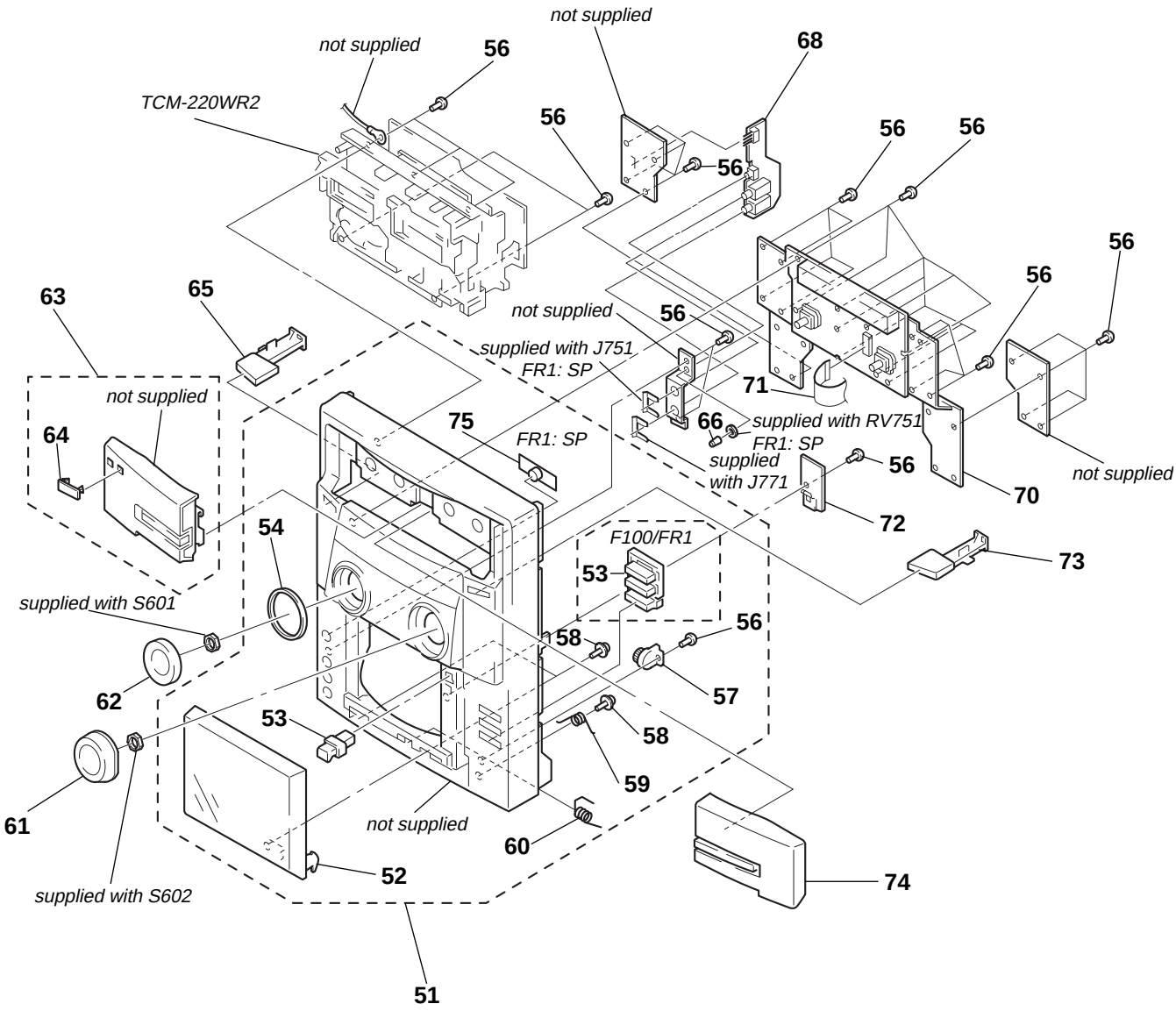
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

(1) CASE SECTION



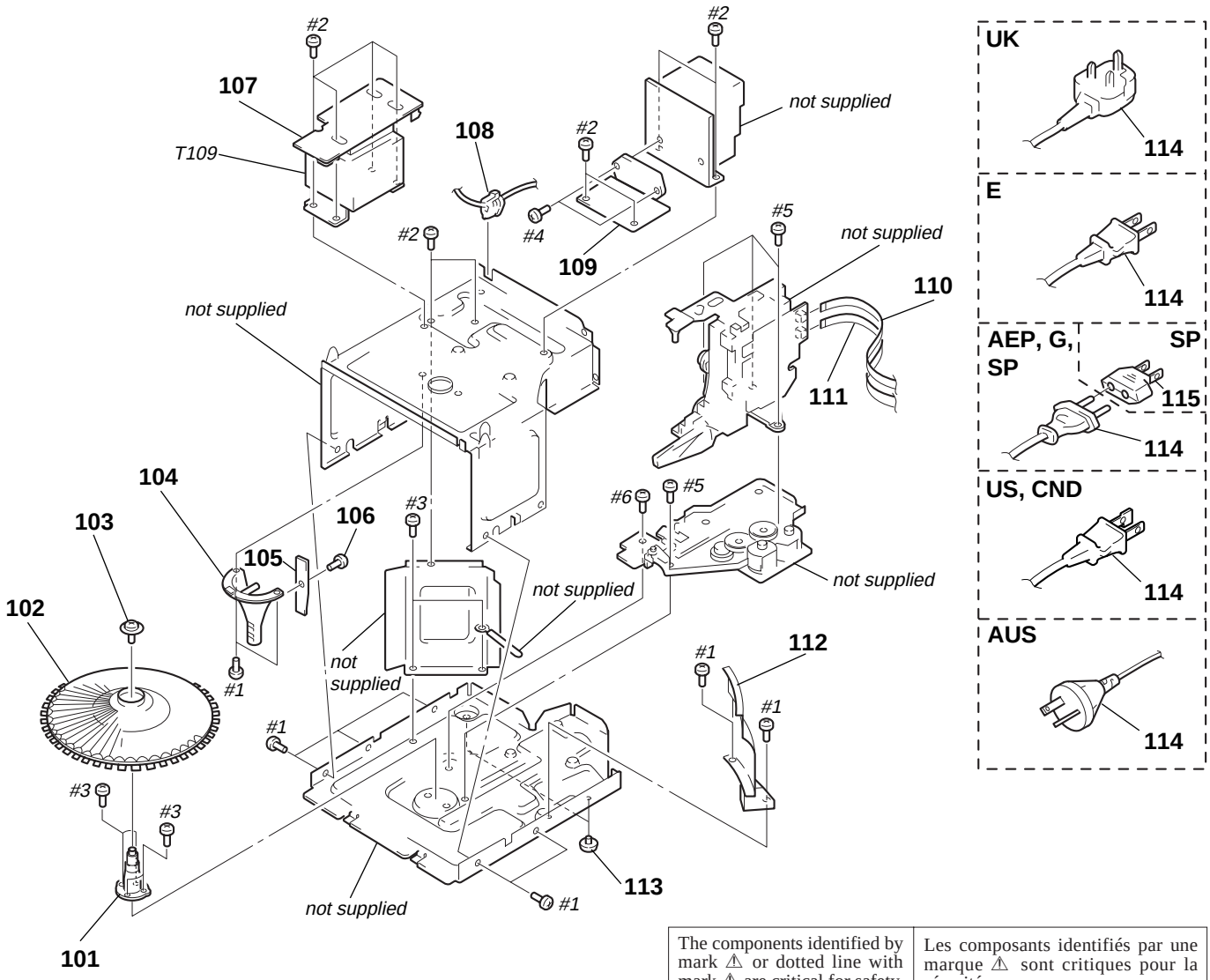
Ref. No.	Part No.	Description	Remark
1	3-363-099-01	SCREW (CASE 3 TP2)	
* 2	4-990-363-01	CASE (F50)	
* 2	4-990-363-21	CASE (F100/FR1)	
* 3	4-990-364-01	PANEL, BACK (F100: US)	
* 3	4-990-364-11	PANEL, BACK (F100: CND)	
* 3	4-990-364-21	PANEL, BACK (FR1: AEP, UK, G)	
* 3	4-990-364-51	PANEL, BACK (FR1: E)	
* 3	4-990-364-61	PANEL, BACK (FR1: AUS)	
* 3	4-990-364-91	PANEL, BACK (FR1: SP)	
* 3	4-990-400-01	PANEL, BACK (F50: US)	
* 3	4-990-400-11	PANEL, BACK (F50: CND)	
4	4-956-370-12	BAND, PLUG FIXED (FR1: UK, AUS)	
* 5	4-990-365-01	COVER	
6	A-4303-574-A	TCB BOARD (FR1: AEP, UK, G)	
6	1-233-544-11	ENCAPSULATED COMPONENT (F50/F100)	
6	1-233-545-11	ENCAPSULATED COMPONENT (FR1: E, AUS)	
6	1-233-546-11	ENCAPSULATED COMPONENT (FR1: SP)	
7	1-769-971-11	WIRE (FLAT TYPE) (13 CORE) (F50/F100/FR1: E, AUS)	
7	1-773-003-11	WIRE (FLAT TYPE) (15 CORE) (90mm) (FR1: AEP, UK, G, SP)	
* 8	A-4398-366-A	MAIN BOARD, COMPLETE (F50)	
* 8	A-4398-368-A	MAIN BOARD, COMPLETE (F100)	
* 8	A-4398-394-A	MAIN BOARD, COMPLETE (FR1: SP)	
* 8	A-4398-400-A	MAIN BOARD, COMPLETE (FR1: E)	
* 8	A-4398-408-A	MAIN BOARD, COMPLETE (FR1: AUS)	
* 8	A-4398-413-A	MAIN BOARD, COMPLETE (FR1: AEP, UK, G)	
9	1-773-156-11	WIRE (FLAT TYPE) (21 CORE)	
10	1-769-688-31	WIRE (FLAT TYPE) (11 CORE)	
FAN101	1-698-792-11	FAN, DC (F100/FR1)	

(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	X-4948-493-1	PANEL ASSY, FRONT (FR1: SP)	
51	X-4948-497-1	PANEL ASSY, FRONT (F50: US)	
51	X-4948-505-1	PANEL ASSY, FRONT (F100: CND/FR: AEP, UK, E, G, AUS)	
51	X-4948-506-1	PANEL ASSY, FRONT (F50: CND)	
51	X-4948-531-1	PANEL ASSY, FRONT (F100: US)	
52	X-4948-560-1	DOOR ASSY	
53	4-989-312-01	LATCH, NS	
54	4-990-399-01	PLATE, JOG ORNAMENTAL	
55	X-4948-532-1	BUTTON (TEXT) ASSY (F100/FR1)	
56	4-951-620-01	SCREW (2.6X8), +BVTP	
57	3-354-963-01	DAMPER	
58	4-933-134-61	SCREW (+PTPWH M2.6X6)	
59	4-990-373-01	SPRING (DOOR 2), TORSION	
60	4-990-361-01	SPRING (DOOR), TORSION	
61	4-990-386-01	KNOB (VOL) (F100/FR1)	
61	4-990-386-12	KNOB (VOL) (F50)	
62	4-990-385-01	KNOB (JOG) (F100/FR1)	
62	4-990-385-11	KNOB (JOG) (F50)	
63	X-4948-538-1	LID (L) ASSY, CASSETTE	
64	4-962-708-11	EMBLEM (4-A), SONY	
65	4-990-393-01	BUTTON (EJECT) (L) (⏏ EJECT)	
66	4-973-644-01	KNOB (MIC) (FR1: SP)	
* 68	1-665-908-11	HP/MIC BOARD	
* 70	A-4398-388-A	PANEL BOARD, COMPLETE (F100)	
* 70	A-4398-391-A	PANEL BOARD, COMPLETE (F50)	
* 70	A-4398-398-A	PANEL BOARD, COMPLETE (FR1: SP)	
* 70	A-4398-406-A	PANEL BOARD, COMPLETE (FR1: E)	
* 70	A-4398-411-A	PANEL BOARD, COMPLETE (FR1: AUS)	
* 70	A-4398-420-A	PANEL BOARD, COMPLETE (FR1: AEP, UK, G)	
71	1-773-011-11	WIRE (FLAT TYPE) (15 CORE) (170mm) (EXCEPT FR1: SP)	
71	1-773-116-11	WIRE (FLAT TYPE) (19 CORE) (FR1: SP)	
* 72	1-665-910-11	CD DOOR BOARD	
73	4-990-394-01	BUTTON (EJECT) (R) (EJECT ⏏)	
74	X-4948-494-2	LID (R) ASSY, CASSETTE (FR1)	
74	X-4948-496-1	LID (R) ASSY, CASSETTE (F50)	
74	X-4948-539-1	LID (R) ASSY, CASSETTE (F100)	
75	4-990-379-01	BUTTON (KARAOKE PON) (FR1: SP)	

(3) CHASSIS SECTION

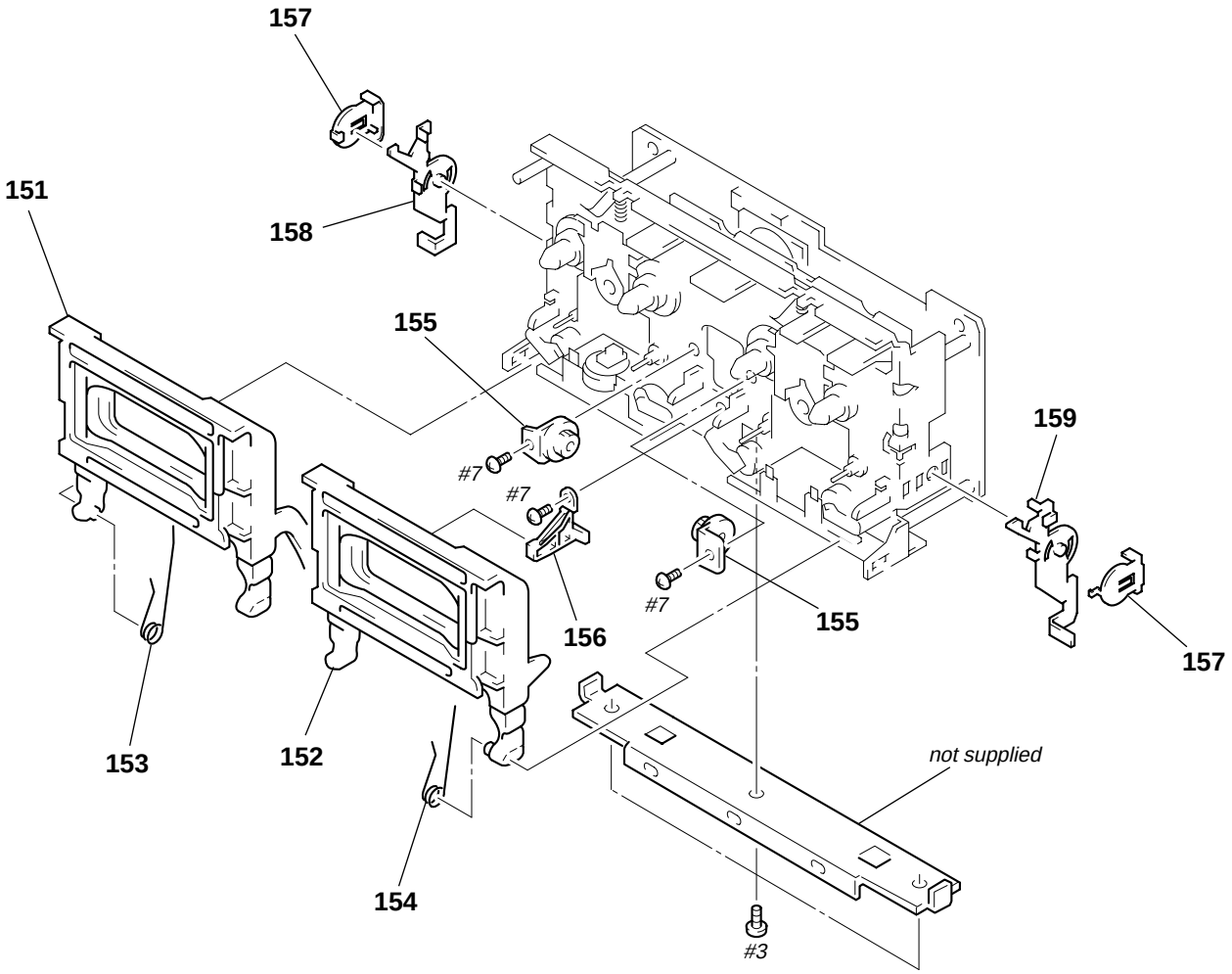


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
101	4-988-439-01	HOLDER, TABLE	
102	4-988-434-11	TABLE (50)	
103	4-957-577-31	SCREW PTP WH (2.6X8) (DIA. 10)	
* 104	4-990-371-01	HOLDER (LED)	
* 105	1-665-913-11	CD LED BOARD	
106	4-951-620-01	SCREW (2.6X8), +BVTP	
* 107	1-665-909-11	TRANS BOARD	
* 108	3-703-244-00	BUSHING (2104), CORD (EXCEPT FR1: E)	
108	3-703-571-11	BUSHING (S) (4516), CORD (FR1: E)	
* 109	A-4398-376-A	POWER AMP BOARD, COMPLETE (F50)	
* 109	A-4398-382-A	POWER AMP BOARD, COMPLETE (F100: US)	
* 109	A-4398-403-A	POWER AMP BOARD, COMPLETE	(FR1: E, SP, AUS)
* 109	A-4398-416-A	POWER AMP BOARD, COMPLETE	(FR1: AEP,UK,G)
* 109	A-4398-748-A	POWER AMP BOARD, COMPLETE (F100: CND)	

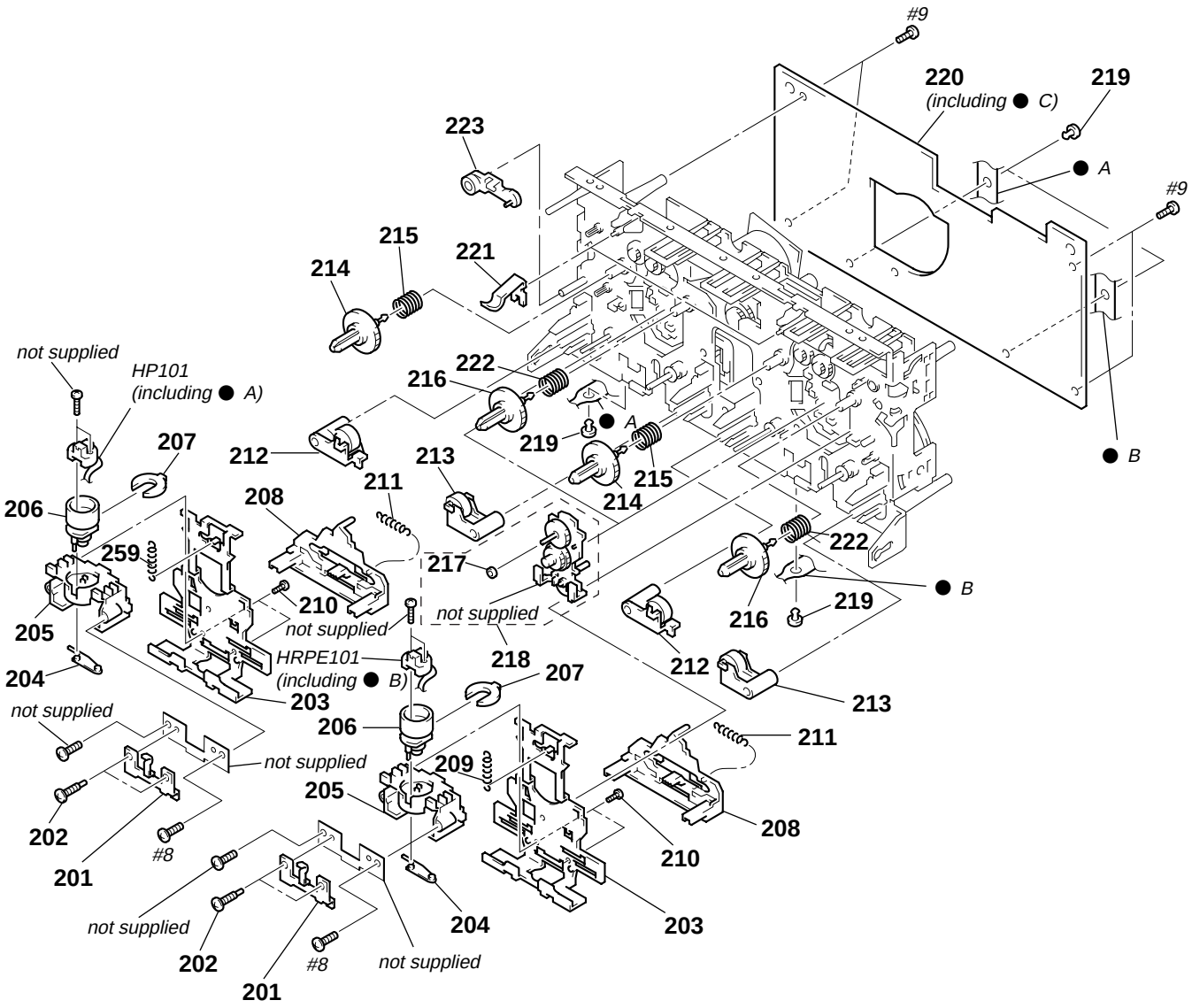
Ref. No.	Part No.	Description	Remark
110	1-782-558-21	WIRE (FLAT TYPE) (16 CORE) (280mm)	(F100/FR1)
110	1-782-560-21	WIRE (FLAT TYPE) (10 CORE) (F50)	
111	1-782-559-21	WIRE (FLAT TYPE) (9 CORE)	
* 112	4-990-370-01	COVER (CD)	
113	4-965-822-01	FOOT	
⚠114	1-575-651-11	CORD, POWER (AEP, G, SP)	
⚠114	1-575-653-11	CORD, POWER (E)	
⚠114	1-690-608-11	CORD, POWER (AUS)	
⚠114	1-690-609-21	CORD, POWER (US, CND)	
⚠114	1-751-529-11	CORD, POWER (UK)	
⚠115	1-569-008-11	ADAPTOR, CONVERSION 2P (SP)	
⚠T901	1-431-348-11	TRANSFORMER, POWER (F100: US)	
⚠T901	1-431-349-11	TRANSFORMER, POWER (F100: CND)	
⚠T901	1-431-350-11	TRANSFORMER, POWER (FR1: E, SP, AUS)	
⚠T901	1-431-351-11	TRANSFORMER, POWER (FR1: AEP, UK, G)	
⚠T901	1-431-352-11	TRANSFORMER, POWER (F50: US, CND)	

(4) TAPE MECHANISM DECK SECTION-1 (TMC-220W2)



Ref. No.	Part No.	Description	Remark
151	X-4946-663-1	HOLDER (L) ASSY, CASSETTE	
152	X-4946-664-1	HOLDER (R) ASSY, CASSETTE	
153	4-959-231-11	SPRING (L), TORSION	
154	4-959-232-11	SPRING (R), TORSION	
155	3-354-963-01	DAMPER	
* 156	4-980-439-01	FULCRUM, HOLDER	
157	3-354-957-01	JOINT (LOCK LEVER)	
* 158	3-354-953-01	LEVER (LOCK LEVER L)	
* 159	3-354-954-01	LEVER (LOCK LEVER R)	

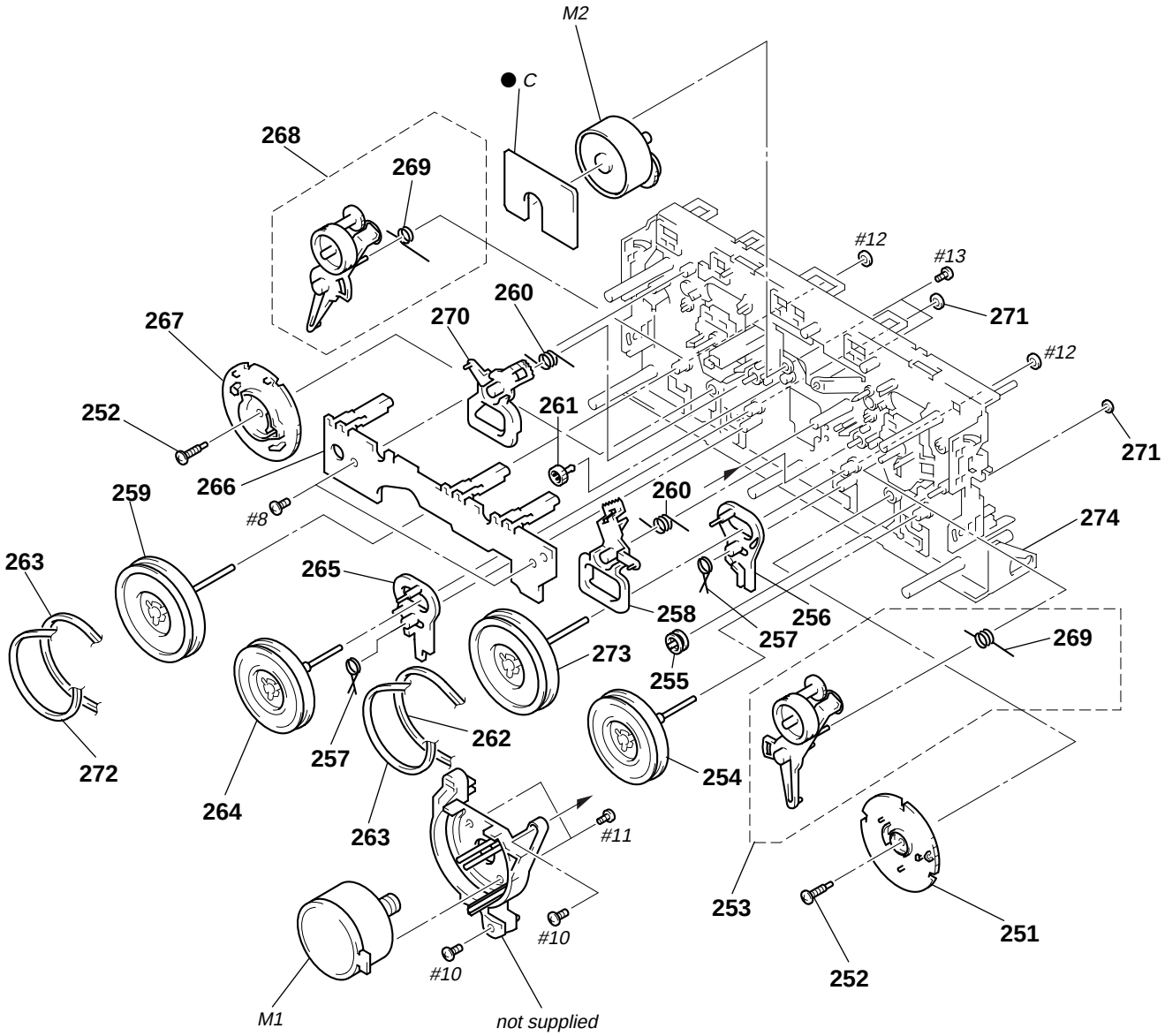
(5) TAPE MECHANISM DECK SECTION-2 (TCM-220WR2)



Ref. No.	Part No.	Description	Remark
201	3-908-560-01	SPRING, AZIMUTH ADJUSTMENT	
202	3-919-684-01	SCREW, AZIMUTH ADJUSTMENT	
203	X-3373-113-1	SLIDER (HEAD) ASSY	
204	3-908-556-01	SPRING, HEAD TOGGLE	
205	3-908-558-02	FITTING BLOCK, HEAD	
206	3-908-557-02	ROTARY BLOCK, HEAD	
* 207	3-908-559-01	STOPPER, AZIMUTH	
208	3-908-555-01	SLIDER (REV SLIDER)	
209	3-917-143-11	SPRING, TENSION	
210	3-388-848-01	SCREW (P2X6) (B TIGHT)	
211	3-939-371-01	SPRING (1), TENSION	
212	X-3369-909-1	PINCH LEVER (REV) ASSY	
213	X-3369-908-1	PINCH LEVER (FWD) ASSY	
214	3-908-613-01	GEAR (S), REEL	
215	3-917-141-01	SPRING, COMPRESSION	
216	X-3371-305-1	REEL (T) ASSY	
217	3-669-465-01	WASHER (1.5), STOPPER	
218	X-3370-173-1	TU ASSY	
219	3-939-862-01	CLIP	
* 220	A-2007-131-A	AUDIO BOARD, COMPLETE	
221	3-930-972-01	DETENT, HALF	
222	3-917-142-01	SPRING, COMPRESSION	
223	3-938-863-01	STOPPER	
HP101	1-500-093-11	HEAD, MAGNETIC (PLAYBACK)	
HRPE101	1-500-094-11	HEAD, MAGNETIC (REC/PB/ERASE)	

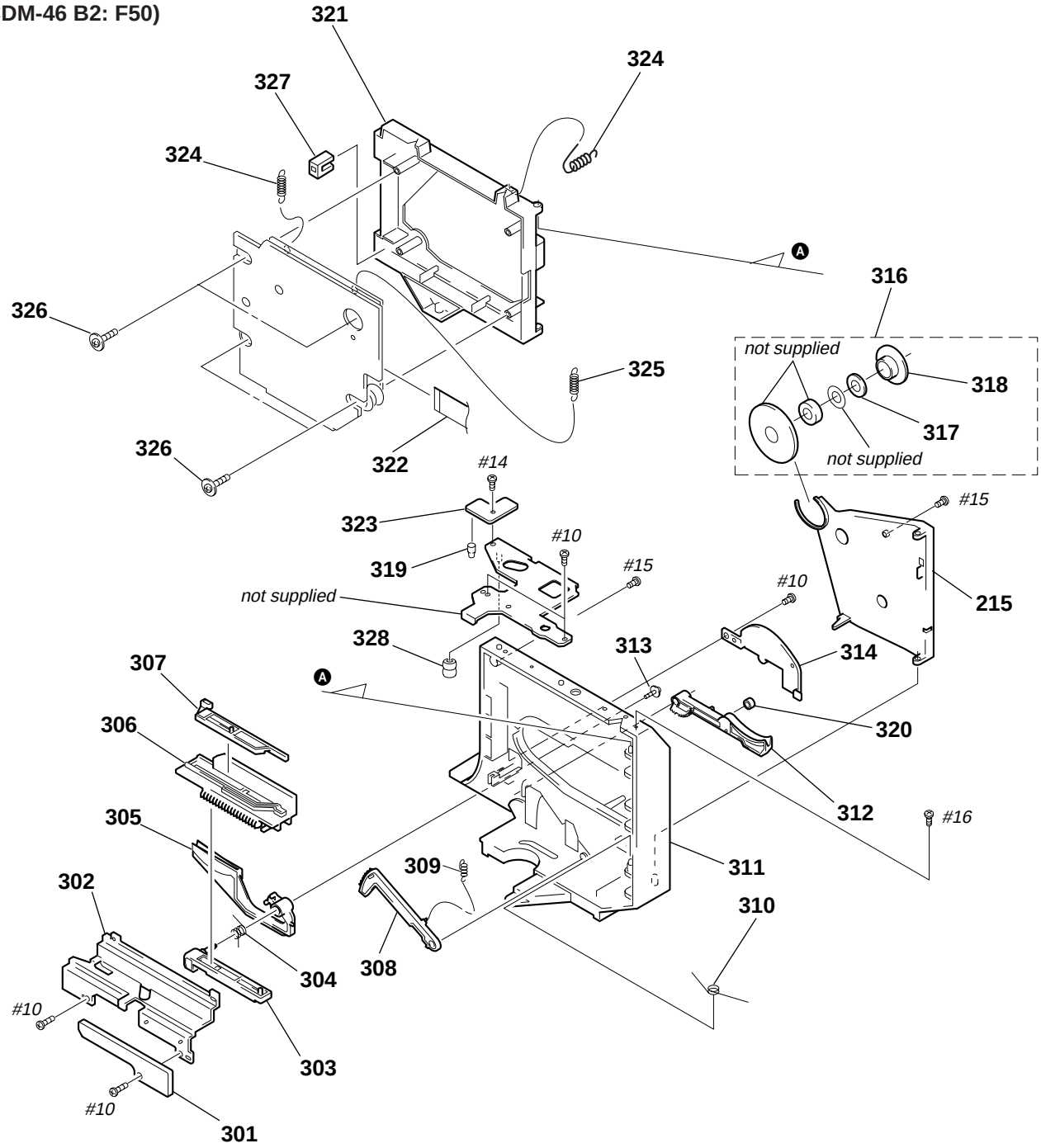
(6) TAPE MECHANISM DECK SECTION-3 (TCM-220WR2)

● C : MOTOR board (supplied with AUDIO board)



Ref. No.	Part No.	Description	Remark
251	3-908-597-01	CAM (A)	
252	3-908-608-11	SCREW, STEP	
253	X-3372-930-1	ARM (A) ASSY, FR	
254	X-3370-882-1	FLYWHEEL (AR) ASSY	
255	3-928-047-01	PULLEY, TENSION	
256	3-908-599-01	LEVER (REV-A)	
257	3-908-601-01	SPRING (REV LEVER), TORSION	
258	3-908-603-01	LEVER (TRIGGER A)	
259	X-3367-593-1	FLYWHEEL (BF) ASSY	
260	3-908-605-01	SPRING (TRIGGER), TORSION	
261	3-908-609-01	GEAR, TRIGGER	
262	3-913-845-11	BELT (A)	
263	3-913-846-11	BELT (FR)	
264	X-3370-171-1	FLYWHEEL (BR) ASSY	
265	3-908-600-01	LEVER (REV-B)	
* 266	1-650-669-11	LEAF SWITCH BOARD	
267	3-908-598-01	CAM (B)	
268	X-3372-931-1	ARM (B) ASSY, FR	
269	3-914-111-01	SPRING (FR), TORSION	
270	3-908-604-01	LEVER (TRIGGER B)	
271	3-911-115-01	WASHER, STOPPER	
272	3-917-176-11	BELT (B)	
273	X-3370-172-1	FLYWHEEL (AF) ASSY	
274	X-3371-441-1	CHASSIS ASSY, MECHANICAL	
M1	X-3371-223-1	MOTOR ASSY, CAPSTAN	
M2	A-2004-410-A	MOTOR ASSY, DC (TRIGGER)	

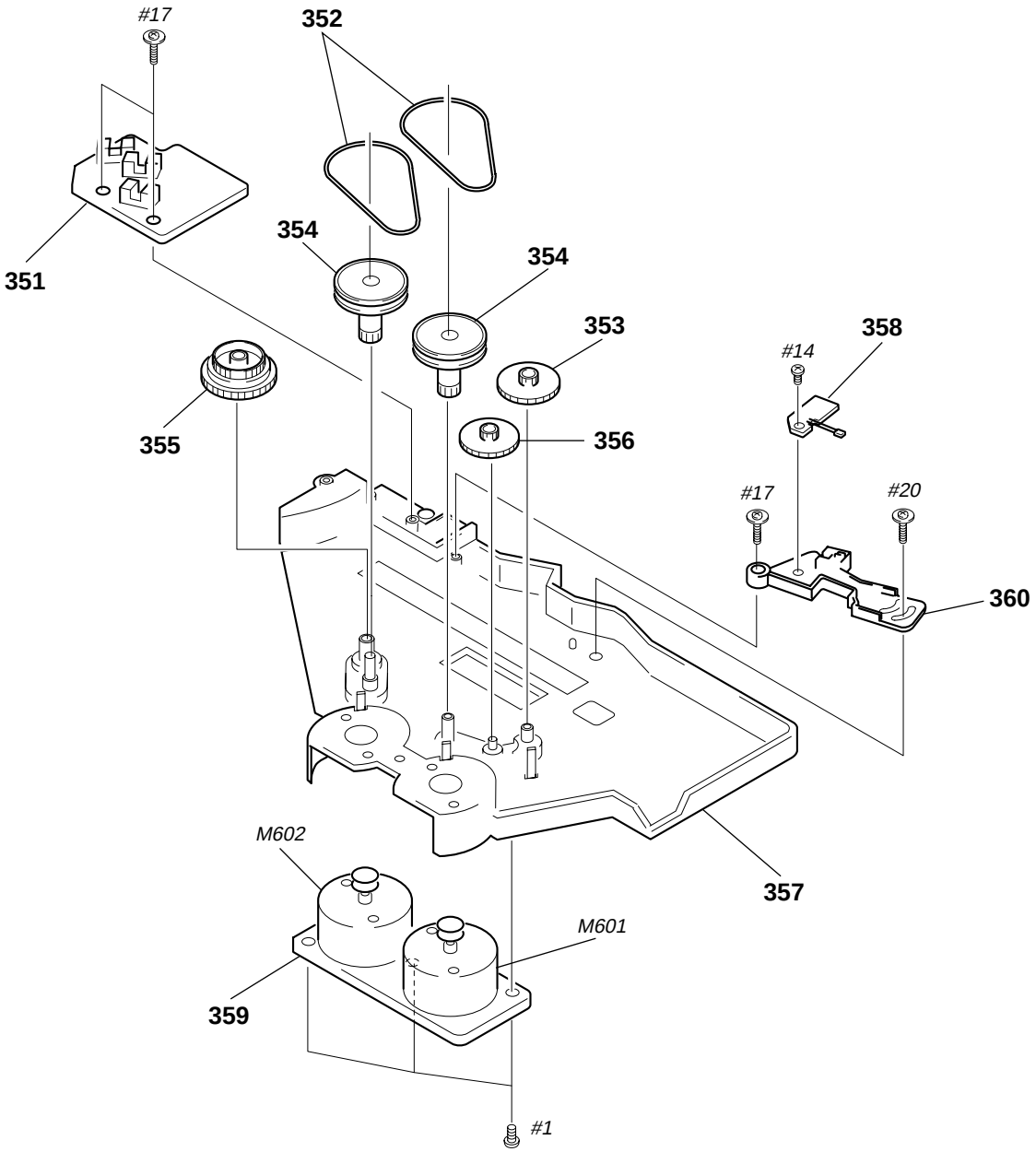
(7) MECHANISM DECK SECTION 1
(CDM-46 B1: F100 / FR1)
(CDM-46 B2: F50)



Ref. No.	Part No.	Description	Remark
* 301	1-663-975-11	SW BOARD	
* 302	4-988-427-01	COVER, CAM	
303	4-988-420-01	SLIDER (LOADING)	
304	4-988-436-01	SPRING (LOADING), TORSION	
305	4-988-418-01	HOLDER (A), DISC	
* 306	4-988-417-01	SLIDER (CAM)	
307	4-988-433-01	SLIDER (LOCK)	
308	X-4948-020-1	LEVER (LOADING) ASSY	
309	4-988-438-01	SPRING (LEVER), TENSION	
310	4-988-437-01	SPRING (HOLDER), TORSION	
* 311	4-988-416-01	BASE, LOADING	
312	4-988-419-01	HOLDER (B), DISC	
313	4-992-069-01	SCREW (+PTPWH) (M2) (DIA. 7)	
* 314	4-988-454-01	COVER (LEVER)	

Ref. No.	Part No.	Description	Remark
* 315	4-988-421-01	HOLDER (MAGNET)	
316	A-4672-385-A	MAGNET ASSY	
317	4-960-633-01	YOKE (MAGNET)	
318	4-960-632-11	PULLEY (B)	
* 319	4-976-473-01	HOLDER (LED-S)	
320	4-988-431-01	ROLLER (DISC)	
321	X-4948-019-1	HOLDER ASSY, BU	
322	1-777-874-11	WIRE (FLAT TYPE) (16 CORE) (75mm)	
* 323	1-663-973-11	DISC SENSOR (S) BOARD	
324	4-988-440-01	SPRING (F-1), TENSION	
325	4-988-441-01	SPRING (F-2), TENSION	
326	4-957-577-21	SCREW PTP WH (2.6X8) (DIA. 10)	
327	4-992-413-02	STOPPER	
328	3-910-095-11	RUBBER, VIBRATION PROOF	

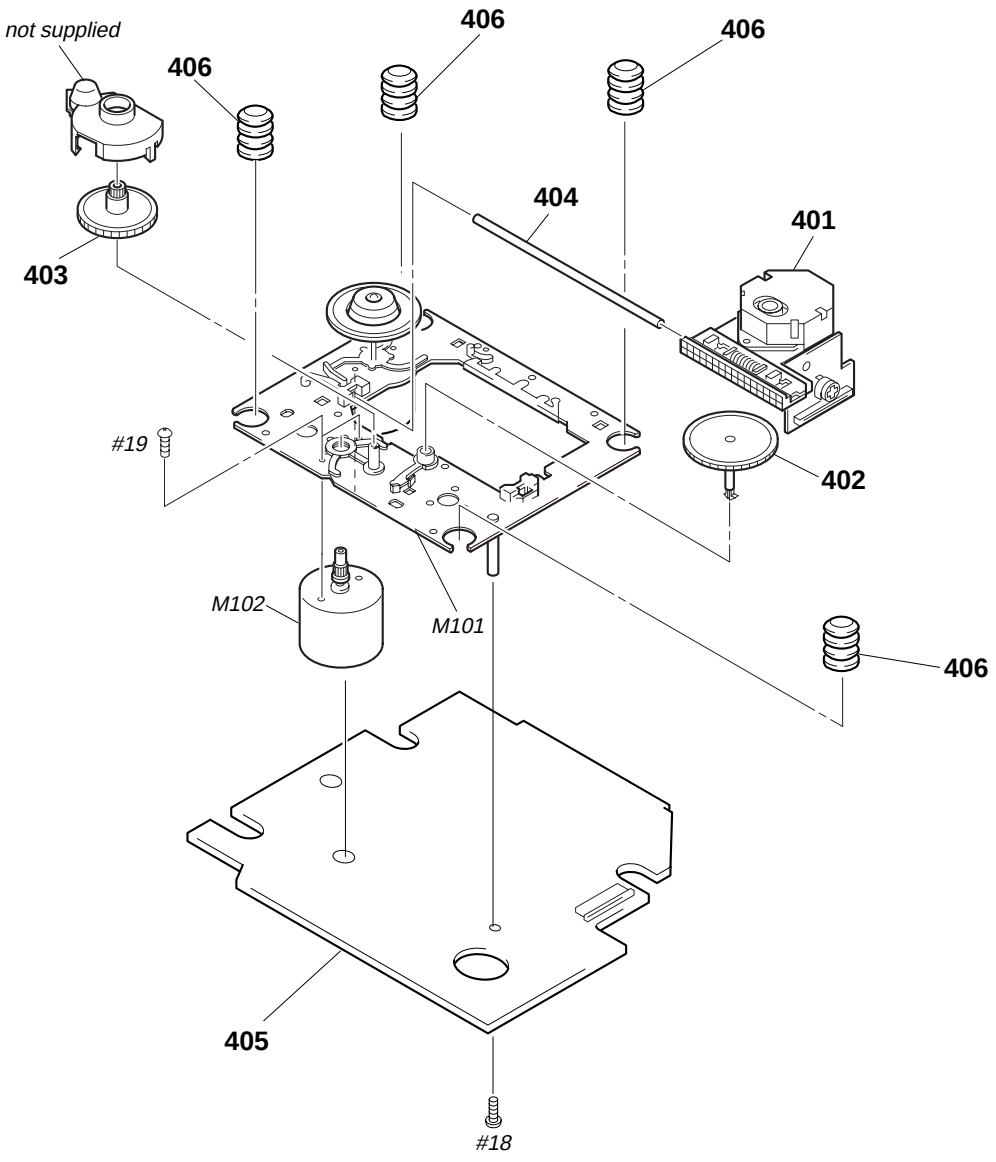
(8) MECHANISM DECK SECTION 2
(CDM-46 B1: F100 / FR1)
(CDM-46 B2: F50)



Ref. No.	Part No.	Description	Remark
* 351	1-663-971-11	TABLE SENSOR BOARD	
352	4-988-414-01	BELT	
353	4-988-423-01	GEAR (A) (LOADING)	
354	4-988-425-01	PULLEY	
355	4-988-424-01	GEAR (TABLE)	
356	4-988-432-01	GEAR (B) (LOADING)	

Ref. No.	Part No.	Description	Remark
* 357	4-988-426-01	BASE (CDM)	
* 358	1-663-972-11	DISC SENSOR (R) BOARD	
* 359	1-663-974-11	CD MOTOR BOARD	
* 360	4-990-669-01	HOLDER (SENSOR)	
M61	X-4948-434-1	MOTOR ASSY (LOADING)	
M62	X-4948-434-1	MOTOR ASSY (TABLE)	

(9) OPTICAL PICK UP SECTION (KSM-213 BFN/M-NP)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
⚠401	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
402	2-626-907-01	GEAR (A) (S)	
403	2-627-003-02	GEAR (B) (RP)	
404	2-626-908-01	SHAFT, SLED	
* 405	A-4699-536-A	BD BOARD, COMPLETE (F50)	
* 405	A-4699-675-A	BD BOARD, COMPLETE (F100/FR1)	
* 406	4-992-054-01	RUBBER, VIBRATION PROOF	
M101	X-2646-110-1	T, T CHASSIS ASSY (MG) (F) (SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (RP) (SLED)	

AUDIO

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH
- Abbreviation
  CND : Canadian
  G : German
  SP : Singapore

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-2007-131-A	AUDIO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C301	1-162-289-31	CERAMIC	390PF	10%	50V
C302	1-126-968-11	ELECT	100uF	20%	6.3V
C303	1-162-282-31	CERAMIC	100PF	10%	50V
C304	1-130-483-00	MYLAR	0.01uF	5%	50V
C305	1-107-715-11	ELECT	22uF	20%	16V
C311	1-162-289-31	CERAMIC	390PF	10%	50V
C313	1-162-282-31	CERAMIC	100PF	10%	50V
C314	1-130-487-00	MYLAR	0.022uF	5%	50V
C315	1-126-233-11	ELECT	22uF	20%	50V
C331	1-137-427-11	FILM	120PF	5%	50V
C332	1-162-288-31	CERAMIC	330PF	10%	50V
C333	1-162-209-31	CERAMIC	27PF	5%	50V
C401	1-162-289-31	CERAMIC	390PF	10%	50V
C402	1-126-968-11	ELECT	100uF	20%	6.3V
C403	1-162-282-31	CERAMIC	100PF	10%	50V
C404	1-130-483-00	MYLAR	0.01uF	5%	50V
C405	1-107-715-11	ELECT	22uF	20%	16V
C411	1-162-289-31	CERAMIC	390PF	10%	50V
C413	1-162-282-31	CERAMIC	100PF	10%	50V
C414	1-130-487-00	MYLAR	0.022uF	5%	50V
C415	1-126-233-11	ELECT	22uF	20%	50V
C431	1-137-427-11	FILM	120PF	5%	50V
C432	1-162-288-31	CERAMIC	330PF	10%	50V
C433	1-162-209-31	CERAMIC	27PF	5%	50V
C601	1-104-396-11	ELECT	10uF	20%	16V
C602	1-104-396-11	ELECT	10uF	20%	16V
C611	1-124-907-11	ELECT	10uF	20%	50V
C612	1-124-907-11	ELECT	10uF	20%	50V
C621	1-137-150-11	FILM	0.01uF	5%	100V
C622	1-126-961-11	ELECT	2.2uF	20%	50V
C623	1-136-155-00	FILM	0.015uF	5%	50V
C624	1-130-481-00	MYLAR	0.0068uF	5%	50V
C625	1-130-481-00	MYLAR	0.0068uF	5%	50V
C627	1-124-903-11	ELECT	1uF	20%	50V
C628	1-136-153-00	FILM	0.01uF	5%	50V
C642	1-104-664-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN601	1-695-382-31	PIN, CONNECTOR (PC BOARD) 21P			
CN602	1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P			
* CN651	1-564-521-11	PLUG, CONNECTOR 6P			
		< IC >			
IC601	8-759-111-44	IC uPC4570C-1			
IC602	8-759-143-54	IC uPC1330HA			
IC611	8-759-111-44	IC uPC4570C-1			
		< COIL >			
L331	1-410-780-11	INDUCTOR 27mH			
L431	1-410-780-11	INDUCTOR 27mH			
		< TRANSISTOR >			
Q621	8-729-142-46	TRANSISTOR 2SC2001-LK			
Q622	8-729-142-46	TRANSISTOR 2SC2001-LK			
Q623	8-729-801-93	TRANSISTOR 2SD1387			
Q651	8-729-900-65	TRANSISTOR DTA144ES			
		< RESISTOR >			
R301	1-247-881-00	CARBON	120K	5%	1/4W
R302	1-249-409-11	CARBON	220	5%	1/4W
R303	1-249-433-11	CARBON	22K	5%	1/4W
R304	1-247-889-00	CARBON	270K	5%	1/4W
R305	1-247-858-11	CARBON	13K	5%	1/4W
R311	1-247-881-00	CARBON	120K	5%	1/4W
R312	1-247-807-31	CARBON	100	5%	1/4W
R314	1-247-882-11	CARBON	130K	5%	1/4W
R315	1-247-850-11	CARBON	6.2K	5%	1/4W
R331	1-249-430-11	CARBON	12K	5%	1/4W
R401	1-247-881-00	CARBON	120K	5%	1/4W
R402	1-249-409-11	CARBON	220	5%	1/4W
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-247-889-00	CARBON	270K	5%	1/4W
R405	1-247-858-11	CARBON	13K	5%	1/4W
R411	1-247-881-00	CARBON	120K	5%	1/4W
R412	1-247-807-31	CARBON	100	5%	1/4W
R414	1-247-882-11	CARBON	130K	5%	1/4W
R415	1-247-850-11	CARBON	6.2K	5%	1/4W
R431	1-249-430-11	CARBON	12K	5%	1/4W
R601	1-249-409-11	CARBON	220	5%	1/4W
R602	1-249-409-11	CARBON	220	5%	1/4W
R608	1-249-409-11	CARBON	220	5%	1/4W
R609	1-249-433-11	CARBON	22K	5%	1/4W
R611	1-249-409-11	CARBON	220	5%	1/4W

Ref. No.	Part No.	Description				Remark
R612	1-249-409-11	CARBON	220	5%	1/4W	
⚠R621	1-212-851-00	FUSIBLE	5.6	5%	1/4W	F
⚠R622	1-212-851-00	FUSIBLE	5.6	5%	1/4W	F
R623	1-249-432-11	CARBON	18K	5%	1/4W	
R624	1-249-432-11	CARBON	18K	5%	1/4W	
R625	1-249-429-11	CARBON	10K	5%	1/4W	
R651	1-247-856-00	CARBON	11K	5%	1/4W	
R652	1-247-856-00	CARBON	11K	5%	1/4W	
R653	1-249-441-11	CARBON	100K	5%	1/4W	
		< VARIABLE RESISTOR >				
RV301	1-238-598-11	RES, ADJ, CARBON 2.2K				
RV311	1-238-598-11	RES, ADJ, CARBON 2.2K				
RV341	1-238-551-11	RES, ADJ, CARBON 220K				
RV401	1-238-598-11	RES, ADJ, CARBON 2.2K				
RV411	1-238-598-11	RES, ADJ, CARBON 2.2K				
RV441	1-238-551-11	RES, ADJ, CARBON 220K				
RV651	1-238-599-11	RES, ADJ, CARBON 4.7K				
RV652	1-238-599-11	RES, ADJ, CARBON 4.7K				
		< TRANSFORMER >				
T621	1-423-980-11	TRANSFORMER, BIAS OSCILLATION				
**********						
*	A-4699-536-A	BD BOARD, COMPLETE (F50)				
*	A-4699-675-A	BD BOARD, COMPLETE (F100/FR1)				
		**********				
		< CAPACITOR >				
C101	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C103	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	
C104	1-163-003-11	CERAMIC CHIP	330PF	10%	50V	
C105	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V	
C106	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V	
C107	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	
C108	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C109	1-163-013-11	CERAMIC CHIP	0.0022uF	10%	50V	
C110	1-163-037-11	CERAMIC CHIP	0.022uF	10%	50V	
C111	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	
C112	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C113	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C114	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C115	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C116	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C117	1-163-001-11	CERAMIC CHIP	220PF	10%	50V	
C118	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	
C119	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	
C120	1-124-234-00	ELECT	22uF	20%	16V	
C121	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V	
C122	1-126-963-11	ELECT	4.7uF	20%	50V	
C123	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C124	1-104-396-11	ELECT	10uF	20%	16V	
C125	1-123-661-11	ELECT	100uF	20%	6.3V	
C126	1-123-661-11	ELECT	100uF	20%	6.3V	
C127	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V	

Ref. No.	Part No.	Description				Remark
C128	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C129	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V	
C130	1-124-443-00	ELECT	100uF	20%	10V	
C131	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C132	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C133	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C141	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C142	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C151	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V	
C152	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V	
C153	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V	
C154	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C155	1-163-093-00	CERAMIC CHIP	10PF	5%	50V	
C156	1-163-085-00	CERAMIC CHIP	2PF		50V	
C157	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C158	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C159	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C160	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C161	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C162	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C163	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C164	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C165	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C166	1-124-443-00	ELECT	100uF	20%	10V	
C167	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C171	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C172	1-123-661-11	ELECT	100uF	20%	6.3V	
C173	1-124-589-11	ELECT	47uF	20%	16V	
C174	1-163-038-00	CERAMIC CHIP	0.1uF		25V	(F100/FR1)
C175	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C181	1-104-664-11	ELECT	47uF	20%	16V	
C182	1-104-664-11	ELECT	47uF	20%	16V	
C183	1-163-003-11	CERAMIC CHIP	330PF	10%	50V	
C184	1-163-003-11	CERAMIC CHIP	330PF	10%	50V	
		< CONNECTOR >				
CN101	1-770-173-11	CONNECTOR, FFC/FPC 16P				
CN102	1-568-853-11	SOCKET, CONNECTOR 10P (F50)				
CN102	1-691-894-21	SOCKET, CONNECTOR 16P (F100/FR1)				
* CN103	1-568-852-11	SOCKET, CONNECTOR 9P				
		< DIODE >				
D151	8-719-987-63	DIODE 1N4148M (F100/FR1)				
		< IC >				
IC101	8-759-449-64	IC LA9240M				
IC102	8-759-449-65	IC LC78622E				
IC103	8-759-449-66	IC LA6541				
IC104	8-759-428-57	IC LC89170M (F100/FR1)				
		< JUMPER RESISTOR >				
JW1	1-216-295-00	CONDUCTOR, CHIP (2012)				
JW2	1-216-295-00	CONDUCTOR, CHIP (2012)				
JW3	1-216-295-00	CONDUCTOR, CHIP (2012) (F50)				

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

BD CD DOOR CD LED

Ref. No.	Part No.	Description			Remark
JW4	1-216-295-00	CONDUCTOR, CHIP (2012) (F100/FR1)			
JW5	1-216-295-00	CONDUCTOR, CHIP (2012) (F100/FR1)			
JW6	1-216-295-00	CONDUCTOR, CHIP (2012)			
JW7	1-216-295-00	CONDUCTOR, CHIP (2012)			
JW8	1-216-295-00	CONDUCTOR, CHIP (2012)			
JW9	1-216-295-00	CONDUCTOR, CHIP (2012)			
JW10	1-216-295-00	CONDUCTOR, CHIP (2012)			
		< TRANSISTOR >			
Q101	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q102	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q103	8-729-119-76	TRANSISTOR 2SA1175-HFE			
		< RESISTOR >			
R101	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R102	1-216-093-00	METAL CHIP	68K	5%	1/10W
R103	1-216-093-00	METAL CHIP	68K	5%	1/10W
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W
R105	1-216-093-00	METAL CHIP	68K	5%	1/10W
R106	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R107	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R108	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R109	1-216-076-00	METAL CHIP	13K	5%	1/10W
R110	1-216-093-00	METAL CHIP	68K	5%	1/10W
R111	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R112	1-216-109-00	METAL CHIP	330K	5%	1/10W
R113	1-216-099-00	METAL CHIP	120K	5%	1/10W
R114	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R115	1-216-087-11	METAL CHIP	39K	5%	1/10W
R116	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R117	1-216-085-00	METAL CHIP	33K	5%	1/10W
R118	1-216-081-00	METAL CHIP	22K	5%	1/10W
R119	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R120	1-216-085-00	METAL CHIP	33K	5%	1/10W
R121	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R122	1-216-083-00	METAL CHIP	27K	5%	1/10W
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W
R124	1-216-093-00	METAL CHIP	68K	5%	1/10W
R125	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R126	1-216-037-00	METAL CHIP	330	5%	1/10W
R127	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R128	1-216-077-00	METAL CHIP	15K	5%	1/10W
R129	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R130	1-216-113-00	METAL CHIP	470K	5%	1/10W
R131	1-216-113-00	METAL CHIP	470K	5%	1/10W
R132	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R133	1-216-113-00	METAL CHIP	470K	5%	1/10W
R134	1-216-113-00	METAL CHIP	470K	5%	1/10W
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W
R137	1-216-009-00	METAL CHIP	22	5%	1/10W
R138	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R151	1-216-045-00	METAL CHIP	680	5%	1/10W
R152	1-216-093-00	METAL CHIP	68K	5%	1/10W
R153	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-077-00	METAL CHIP	15K	5%	1/10W
R158	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R159	1-216-083-00	METAL CHIP	27K	5%	1/10W
R160	1-216-037-00	METAL CHIP	330	5%	1/10W
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W
R162	1-216-037-00	METAL CHIP	330	5%	1/10W (F100/FR1)
R163	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R164	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R165	1-216-025-00	METAL GLAZE	100	5%	1/10W
R166	1-216-025-00	METAL GLAZE	100	5%	1/10W
R171	1-216-025-00	METAL GLAZE	100	5%	1/10W (F100/FR1)
R172	1-216-025-00	METAL GLAZE	100	5%	1/10W (F100/FR1)
R173	1-216-025-00	METAL GLAZE	100	5%	1/10W (F100/FR1)
R174	1-216-025-00	METAL GLAZE	100	5%	1/10W (F100/FR1)
R181	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R182	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R183	1-216-073-00	METAL CHIP	10K	5%	1/10W
R184	1-216-073-00	METAL CHIP	10K	5%	1/10W
R191	1-216-025-00	METAL GLAZE	100	5%	1/10W
R192	1-216-041-00	METAL CHIP	470	5%	1/10W
R193	1-216-041-00	METAL CHIP	470	5%	1/10W
R194	1-216-025-00	METAL GLAZE	100	5%	1/10W
R195	1-216-041-00	METAL CHIP	470	5%	1/10W
R196	1-216-025-00	METAL GLAZE	100	5%	1/10W
R197	1-216-025-00	METAL GLAZE	100	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
		< VIBRATOR >			
X101	1-577-576-21	VIBRATOR, CRYSTAL (16.9344MHz)			
**********					
*	1-665-910-11	CD DOOR BOARD			
		**********			
		< SWITCH >			
S413	1-762-936-11	SWITCH, LEVER (DOOR DET)			
**********					
*	1-665-913-11	CD LED BOARD			
		**********			
		< CONNECTOR >			
CN904	1-506-481-11	PIN, CONNECTOR 2P			
		< LED >			
D391	8-719-058-64	LED SEL5823A-TP15			
D392	8-719-058-64	LED SEL5823A-TP15			
D393	8-719-058-04	LED SEL5223S-TP15			
D394	8-719-058-03	LED SEL5423E-TP15			
		< RESISTOR >			
R395	1-249-412-11	CARBON	390	5%	1/4W
**********					

Ref. No.	Part No.	Description			Remark
*	1-663-974-11	CD MOTOR BOARD			
		**********			
		< CONNECTOR >			
CN61	1-506-469-11	PIN, CONNECTOR 4P			
**********					
*	1-663-972-11	DISC SENSOR (R) BOARD			
		**********			
*	4-990-669-01	HOLDER (SENSOR)			
	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S			
		< TRANSISTOR >			
Q51	8-729-926-31	PHOTO TRANSISTOR PT483F1S			
**********					
*	1-663-973-11	DISC SENSOR (S) BOARD			
		**********			
*	4-976-473-01	HOLDER (LED-S)			
		< CONNECTOR >			
* CN53	1-568-951-11	PIN, CONNECTOR 2P			
		< DIODE >			
D51	8-719-055-84	DIODE GL-528VS1			
		< RESISTOR >			
R54	1-249-409-11	CARBON	220	5%	1/4W
**********					
*	1-665-908-11	HP/MIC BOARD			
		**********			
		< CAPACITOR >			
C751	1-126-961-11	ELECT	2.2uF	20%	50V (FR1: SP)
C752	1-162-294-31	CERAMIC	0.001uF	10%	50V (FR1: SP)
C754	1-162-215-31	CERAMIC	47PF	5%	50V (FR1: SP)
C755	1-162-293-31	CERAMIC	820PF	10%	50V (FR1: SP)
C756	1-126-959-11	ELECT	0.47uF	20%	50V (FR1: SP)
C761	1-162-215-31	CERAMIC	47PF	5%	50V (FR1: SP)
C763	1-126-964-11	ELECT	10uF	20%	50V (FR1: SP)
C765	1-164-159-11	CERAMIC	0.1uF		50V (FR1: SP)
C766	1-164-159-11	CERAMIC	0.1uF		50V (FR1: SP)
C776	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN751	1-568-453-11	PIN, CONNECTOR (PC BOARD) 4P			(EXCEPT FR1: SP)
* CN751	1-566-973-11	PIN, CONNECTOR (PC BOARD) 8P (FR1: SP)			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC751	8-759-634-50	IC M5218AL (FR1: SP)			
		< JACK >			
J751	1-573-151-11	JACK, LARGE TYPE (MIC) (FR1: SP)			
J771	1-573-151-11	JACK, LARGE TYPE (PHONES)			
		< RESISTOR >			
R751	1-249-429-11	CARBON	10K	5%	1/4W (FR1: SP)
R752	1-249-417-11	CARBON	1K	5%	1/4W (FR1: SP)
R753	1-249-441-11	CARBON	100K	5%	1/4W (FR1: SP)
R754	1-249-417-11	CARBON	1K	5%	1/4W (FR1: SP)
R755	1-249-433-11	CARBON	22K	5%	1/4W (FR1: SP)
R761	1-249-429-11	CARBON	10K	5%	1/4W (FR1: SP)
R762	1-247-885-00	CARBON	180K	5%	1/4W (FR1: SP)
R763	1-249-409-11	CARBON	220	5%	1/4W (FR1: SP)
R764	1-247-903-00	CARBON	1M	5%	1/4W (FR1: SP)
		< VARIABLE RESISTOR >			
RV751	1-225-458-11	RES, VAR, CARBON 50K (FR1: SP) (MIC-VOL)			
**********					
*	1-650-669-11	LEAF SWITCH BOARD			
		**********			
		< CONNECTOR >			
* CN1001	1-568-854-11	SOCKET, CONNECTOR 11P			
		< TRANSISTOR >			
Q1001	8-749-010-90	TRANSISTOR PHOTO REFLECTOR NJL5165KA-H			
Q1002	8-749-010-90	TRANSISTOR PHOTO REFLECTOR NJL5165KA-H			
		< RESISTOR >			
R1001	1-247-818-11	CARBON	300	5%	1/4W
R1002	1-247-820-11	CARBON	360	5%	1/4W
R1003	1-249-414-11	CARBON	560	5%	1/4W
R1004	1-247-834-11	CARBON	1.3K	5%	1/4W
R1005	1-247-818-11	CARBON	300	5%	1/4W
		< SWITCH >			
S1001	1-692-832-11	SWITCH, PUSH (1 KEY) (A PLAY)			
S1002	1-692-832-11	SWITCH, PUSH (1 KEY) (B PLAY)			
S1003	1-572-248-11	SWITCH, LEAF (A HALF)			
S1004	1-571-281-21	SWITCH, LEAF (A CrO2)			
S1005	1-571-281-21	SWITCH, LEAF (REC A)			
S1006	1-572-248-11	SWITCH, LEAF (B HALF)			
S1008	1-571-281-21	SWITCH, LEAF (B CrO2)			
S1009	1-571-281-21	SWITCH, LEAF (REC B)			
**********					

MAIN

Ref. No.	Part No.	Description				Remark
*	A-4398-366-A	MAIN BOARD, COMPLETE (F50)				
*	A-4398-368-A	MAIN BOARD, COMPLETE (F100)				
*	A-4398-394-A	MAIN BOARD, COMPLETE (FR1: SP)				
*	A-4398-400-A	MAIN BOARD, COMPLETE (FR1: E)				
*	A-4398-408-A	MAIN BOARD, COMPLETE (FR1: AUS)				
*	A-4398-413-A	MAIN BOARD, COMPLETE (FR1: AEP, UK, G)				
		**********				
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S				
		< CAPACITOR >				
C121	1-162-286-31	CERAMIC	220PF	10%	50V	(FR1: AEP, UK, G)
C122	1-162-286-31	CERAMIC	220PF	10%	50V	(FR1: AEP, UK, G)
C123	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C131	1-130-493-00	MYLAR	0.068uF	5%	50V	(FR1: AEP, UK, G)
C132	1-130-493-00	MYLAR	0.068uF	5%	50V	(FR1: AEP, UK, G)
C140	1-126-960-11	ELECT	1uF	20%	50V	(F100/FR1)
C171	1-162-286-31	CERAMIC	220PF	10%	50V	(FR1: AEP, UK, G)
C172	1-162-286-31	CERAMIC	220PF	10%	50V	(FR1: AEP, UK, G)
C173	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C181	1-130-493-00	MYLAR	0.068uF	5%	50V	(FR1: AEP, UK, G)
C182	1-130-493-00	MYLAR	0.068uF	5%	50V	(FR1: AEP, UK, G)
C191	1-126-963-11	ELECT	4.7uF	20%	50V	(F100/FR1)
C192	1-164-159-11	CERAMIC	0.1uF		50V	(F100/FR1)
C201	1-136-169-00	FILM	0.22uF	5%	50V	
C202	1-136-169-00	FILM	0.22uF	5%	50V	
C203	1-130-493-00	MYLAR	0.068uF	5%	50V	
C204	1-130-493-00	MYLAR	0.068uF	5%	50V	
C205	1-130-486-00	MYLAR	0.018uF	10%	50V	
C206	1-130-486-00	MYLAR	0.018uF	10%	50V	
C207	1-130-480-00	MYLAR	0.0056uF	5%	50V	
C208	1-130-479-00	MYLAR	0.0047uF	5%	50V	
C209	1-130-474-00	MYLAR	0.0018uF	5%	50V	
C210	1-126-964-11	ELECT	10uF	20%	50V	
C211	1-126-964-11	ELECT	10uF	20%	50V	
C212	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C213	1-136-165-00	FILM	0.1uF	5%	50V	
C214	1-136-165-00	FILM	0.1uF	5%	50V	
C215	1-130-471-00	MYLAR	0.001uF	5%	50V	(FR1: SP)
C216	1-136-167-00	FILM	0.15uF	5%	50V	(FR1: SP)
C217	1-126-964-11	ELECT	10uF	20%	50V	(F100/FR1)
C221	1-126-933-11	ELECT	100uF	20%	10V	
C222	1-126-933-11	ELECT	100uF	20%	10V	
C223	1-126-964-11	ELECT	10uF	20%	50V	
C224	1-162-290-31	CERAMIC	470PF	10%	50V	
C226	1-126-964-11	ELECT	10uF	20%	50V	
C231	1-126-960-11	ELECT	1uF	20%	50V	

Ref. No.	Part No.	Description				Remark
C242	1-162-292-31	CERAMIC	680PF	10%	50V	(F100/FR1)
C243	1-126-964-11	ELECT	10uF	20%	50V	(F100/FR1)
C244	1-162-286-31	CERAMIC	220PF	10%	50V	(FR1: AEP, UK, G)
C245	1-162-306-11	CERAMIC	0.01uF	20%	16V	(F100/FR1)
C246	1-162-306-11	CERAMIC	0.01uF	20%	16V	(F100/FR1)
C247	1-164-159-11	CERAMIC	0.1uF		50V	(F50/F100/FR1: AEP, UK, G)
C251	1-136-169-00	FILM	0.22uF	5%	50V	
C252	1-136-169-00	FILM	0.22uF	5%	50V	
C253	1-130-493-00	MYLAR	0.068uF	5%	50V	
C254	1-130-493-00	MYLAR	0.068uF	5%	50V	
C255	1-130-486-00	MYLAR	0.018uF	10%	50V	
C256	1-130-486-00	MYLAR	0.018uF	10%	50V	
C257	1-130-480-00	MYLAR	0.0056uF	5%	50V	
C258	1-130-479-00	MYLAR	0.0047uF	5%	50V	
C259	1-130-474-00	MYLAR	0.0018uF	5%	50V	
C260	1-126-964-11	ELECT	10uF	20%	50V	
C261	1-126-964-11	ELECT	10uF	20%	50V	
C262	1-130-481-00	MYLAR	0.0068uF	5%	50V	
C263	1-136-165-00	FILM	0.1uF	5%	50V	
C264	1-136-165-00	FILM	0.1uF	5%	50V	
C267	1-126-964-11	ELECT	10uF	20%	50V	(F100/FR1)
C276	1-126-964-11	ELECT	10uF	20%	50V	
C278	1-126-965-11	ELECT	22uF	20%	50V	
C279	1-126-965-11	ELECT	22uF	20%	50V	
C281	1-126-933-11	ELECT	100uF	20%	10V	
C282	1-126-961-11	ELECT	2.2uF	20%	50V	
C283	1-126-933-11	ELECT	100uF	20%	10V	(F100)
C283	1-126-923-11	ELECT	220uF	20%	10V	(F50/FR1)
C284	1-126-923-11	ELECT	220uF	20%	10V	
C291	1-126-959-11	ELECT	0.47uF	20%	50V	
C295	1-162-306-11	CERAMIC	0.01uF	20%	16V	(F100/FR1)
C296	1-126-933-11	ELECT	100uF	20%	10V	(F100/FR1)
C301	1-126-967-11	ELECT	47uF	20%	16V	
C302	1-164-159-11	CERAMIC	0.1uF		50V	
C303	1-136-173-00	FILM	0.47uF	5%	50V	
C304	1-126-916-11	ELECT	1000uF	20%	6.3V	
C305	1-164-159-11	CERAMIC	0.1uF		50V	
C307	1-126-933-11	ELECT	100uF	20%	10V	
C309	1-164-027-11	CERAMIC	22PF	5%	50V	
C310	1-164-056-11	CERAMIC	27PF	5%	50V	
C311	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C312	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C314	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C315	1-126-933-11	ELECT	100uF	20%	10V	
C316	1-161-494-00	CERAMIC	0.022uF		25V	
C401	1-126-933-11	ELECT	100uF	20%	10V	
C402	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C403	1-162-306-11	CERAMIC	0.01uF	20%	16V	

Ref. No.	Part No.	Description			Remark
C410	1-126-933-11	ELECT	100uF	20%	10V
C411	1-110-489-11	CAPACITOR	1F		5.5V (F100/FR1)
C411	1-126-925-11	ELECT	470uF	20%	10V (F50)
C412	1-164-159-11	CERAMIC	0.1uF		50V
C413	1-162-294-31	CERAMIC	0.001uF	10%	50V
C442	1-126-967-11	ELECT	47uF	20%	16V
C443	1-130-477-00	MYLAR	0.0033uF	5%	50V
C444	1-130-477-00	MYLAR	0.0033uF	5%	50V
C445	1-162-282-31	CERAMIC	100PF	10%	50V
C451	1-126-923-11	ELECT	220uF	20%	10V
C453	1-164-159-11	CERAMIC	0.1uF		50V
C456	1-164-159-11	CERAMIC	0.1uF		50V
C457	1-164-159-11	CERAMIC	0.1uF		50V
C458	1-164-159-11	CERAMIC	0.1uF		50V
C460	1-164-159-11	CERAMIC	0.1uF		50V
C492	1-126-967-11	ELECT	47uF	20%	16V
C493	1-130-477-00	MYLAR	0.0033uF	5%	50V
C494	1-130-477-00	MYLAR	0.0033uF	5%	50V
C495	1-162-282-31	CERAMIC	100PF	10%	50V
C900	1-126-964-11	ELECT	10uF	20%	50V
C901	1-164-159-11	CERAMIC	0.1uF		50V
C902	1-164-159-11	CERAMIC	0.1uF		50V
C903	1-136-165-00	FILM	0.1uF	5%	50V
C904	1-128-548-11	ELECT	4700uF	20%	25V
C906	1-126-933-11	ELECT	100uF	20%	10V
C909	1-126-964-11	ELECT	10uF	20%	50V
C910	1-126-933-11	ELECT	100uF	20%	10V
C911	1-126-964-11	ELECT	10uF	20%	50V
C912	1-126-916-11	ELECT	1000uF	20%	6.3V
C913	1-126-943-11	ELECT	2200uF	20%	25V
C914	1-126-767-11	ELECT	1000uF	20%	16V
C915	1-126-967-11	ELECT	47uF	20%	16V
C916	1-164-159-11	CERAMIC	0.1uF		50V
C917	1-126-968-11	ELECT	100uF	20%	50V
C918	1-126-968-11	ELECT	100uF	20%	50V
C919	1-126-964-11	ELECT	10uF	20%	50V
C920	1-126-964-11	ELECT	10uF	20%	50V
C921	1-106-220-00	MYLAR	0.1uF	5%	100V (F100/FR1: E, SP, AUS)
C921	1-136-165-00	FILM	0.1uF	5%	50V (F50/FR1: AEP, UK, G)
C922	1-117-750-11	ELECT	3300uF	20%	63V (F100/FR1: E, SP, AUS)
C922	1-126-974-11	ELECT	3300uF	20%	50V (F50/FR1: AEP, UK, G)
C923	1-126-964-11	ELECT	10uF	20%	50V
C924	1-126-964-11	ELECT	10uF	20%	50V
C925	1-126-964-11	ELECT	10uF	20%	50V
C930	1-164-159-11	CERAMIC	0.1uF		50V
C953	1-136-165-00	FILM	0.1uF	5%	50V
C954	1-126-943-11	ELECT	2200uF	20%	25V
C956	1-126-933-11	ELECT	100uF	20%	10V
C971	1-106-220-00	MYLAR	0.1uF	5%	100V (F100/FR1: E, SP, AUS)
C971	1-136-165-00	FILM	0.1uF	5%	50V (F50/FR1: AEP, UK, G)
C972	1-117-750-11	ELECT	3300uF	20%	63V (F100/FR1: E, SP, AUS)
C972	1-126-974-11	ELECT	3300uF	20%	50V (F50/FR1: AEP, UK, G)
C1501	1-130-479-00	MYLAR	0.0047uF	5%	50V
C1502	1-162-290-31	CERAMIC	470PF	10%	50V
C1503	1-164-159-11	CERAMIC	0.1uF		50V
C1504	1-126-960-11	ELECT	1uF	20%	50V
C1505	1-126-964-11	ELECT	10uF	20%	50V
C1506	1-126-964-11	ELECT	10uF	20%	50V
C1507	1-126-960-11	ELECT	1uF	20%	50V
C1508	1-126-933-11	ELECT	100uF	20%	10V
C1521	1-126-964-11	ELECT	10uF	20%	50V
C1522	1-126-964-11	ELECT	10uF	20%	50V
C1523	1-126-933-11	ELECT	100uF	20%	16V
C1531	1-164-159-11	CERAMIC	0.1uF		50V
C1532	1-164-159-11	CERAMIC	0.1uF		50V
C1533	1-164-159-11	CERAMIC	0.1uF		50V
C1534	1-126-935-11	ELECT	470uF	20%	16V
C1551	1-130-479-00	MYLAR	0.0047uF	5%	50V
C1552	1-162-290-31	CERAMIC	470PF	10%	50V
C1553	1-164-159-11	CERAMIC	0.1uF		50V
C1554	1-126-960-11	ELECT	1uF	20%	50V
C1555	1-126-964-11	ELECT	10uF	20%	50V
C1556	1-126-964-11	ELECT	10uF	20%	50V
C1557	1-126-960-11	ELECT	1uF	20%	50V
C1558	1-126-933-11	ELECT	100uF	20%	10V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN102	1-568-834-11	SOCKET, CONNECTOR 15P	(EXCEPT FR1: SP)
CN102	1-568-802-11	SOCKET, CONNECTOR 19P	(FR1: SP)
CN105	1-564-506-11	PLUG, CONNECTOR 3P	(F100/FR1)
* CN201	1-568-832-11	SOCKET, CONNECTOR 13P	(F50/F100/FR1: E, AUS)
CN201	1-568-834-11	SOCKET, CONNECTOR 15P	(FR1: AEP, UK, G, SP)
* CN202	1-564-506-11	PLUG, CONNECTOR 3P	
CN205	1-568-838-11	SOCKET, CONNECTOR 21P	
* CN206	1-568-830-11	SOCKET, CONNECTOR 11P	
* CN207	1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P	
CN401	1-568-853-11	SOCKET, CONNECTOR 10P	(F50)
CN401	1-691-894-21	SOCKET, CONNECTOR 16P	(F100/FR1)
* CN402	1-568-852-11	SOCKET, CONNECTOR 9P	
* CN403	1-568-951-11	PIN, CONNECTOR 2P	
* CN404	1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P	
* CN405	1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P	
* CN451	1-568-955-11	PIN, CONNECTOR 6P	
* CN453	1-568-951-11	PIN, CONNECTOR 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D140	8-719-987-63	DIODE 1N4148M	(F100/FR1)
D141	8-719-815-85	DIODE 1S1585	(F100/FR1: E, SP, AUS)
D141	8-719-987-63	DIODE 1N4148M	(F50/FR1: AEP, UK, G)
D191	8-719-815-85	DIODE 1S1585	(F100/FR1: E, SP, AUS)
D191	8-719-987-63	DIODE 1N4148M	(FR1: AEP, UK, G)
D192	8-719-815-85	DIODE 1S1585	(F100/FR1: E, SP, AUS)
D192	8-719-987-63	DIODE 1N4148M	(FR1: AEP, UK, G)
D281	8-719-815-85	DIODE 1S1585	(F100/FR1: E, SP, AUS)
D281	8-719-987-63	DIODE 1N4148M	(F50/FR1: AEP, UK, G)

MAIN

Ref. No.	Part No.	Description	Remark
D291	8-719-987-63	DIODE 1N4148M	
D301	8-719-024-99	DIODE 11ES2-NTA2B	
D302	8-719-024-99	DIODE 11ES2-NTA2B	
D303	8-719-987-63	DIODE 1N4148M	
D304	8-719-987-63	DIODE 1N4148M	
D305	8-719-987-63	DIODE 1N4148M	
D306	8-719-987-63	DIODE 1N4148M	
D307	8-719-987-63	DIODE 1N4148M	
D401	8-719-024-99	DIODE 11ES2-NTA2B	
D402	8-719-987-63	DIODE 1N4148M	
D403	8-719-987-63	DIODE 1N4148M	
D411	8-719-987-63	DIODE 1N4148M	
D901	8-719-510-68	DIODE D5SBA20F01 (F100/FR1: E, SP, AUS)	
D901	8-719-028-23	DIODE D3SBA20-4101 (F50/FR1: AEP, UK, G)	
D902	8-719-024-99	DIODE 11ES2-NTA2B	
D903	8-719-024-99	DIODE 11ES2-NTA2B	
D904	8-719-024-99	DIODE 11ES2-NTA2B	
D905	8-719-024-99	DIODE 11ES2-NTA2B	
D906	8-719-024-99	DIODE 11ES2-NTA2B	
D907	8-719-024-99	DIODE 11ES2-NTA2B	
D908	8-719-024-99	DIODE 11ES2-NTA2B	
D909	8-719-024-99	DIODE 11ES2-NTA2B	
D910	8-719-002-60	DIODE UZL-33L	
D911	8-719-010-43	DIODE UZ-5.6BSC	
D912	8-719-024-99	DIODE 11ES2-NTA2B	
D913	8-719-024-99	DIODE 11ES2-NTA2B	
D914	8-719-024-99	DIODE 11ES2-NTA2B	
D915	8-719-001-42	DIODE UZL-11M1	
D921	8-719-987-63	DIODE 1N4148M	
D951	8-719-987-63	DIODE 1N4148M	
D952	8-719-987-63	DIODE 1N4148M	
		< GROUND TERMINAL >	
EPT1	1-537-770-21	TERMINAL BOARD, GROUND	
		< FERRITE BEAD >	
FB601	1-412-473-21	INDUCTOR 0UH (F100/FR1)	
FB602	1-412-473-21	INDUCTOR 0UH	
FB603	1-412-473-21	INDUCTOR 0UH (F100/FR1)	
FB604	1-412-473-21	INDUCTOR 0UH	
		< IC >	
IC102	8-759-000-48	IC MC14052BCP	
IC201	8-759-460-02	IC M62427FP-A	
IC231	8-759-634-51	IC M5218AP	
IC241	8-759-634-51	IC M5218AP (F100/FR1)	
IC281	8-759-111-68	IC uPC1237HA	
IC295	8-749-923-04	IC TOTX178 (CD DIGITAL OUT OPTICAL) (F100/FR1)	
IC301	8-759-479-45	IC uPD780016YGF-013-3BA	
IC302	8-759-635-63	IC M51943BSL	
IC401	8-752-884-76	IC CXP84340-051Q	
IC411	8-759-412-71	IC HY6264ALJ-70-TR (F50)	
IC411	8-759-463-99	IC M5M5256DFP-70XL (F100/FR1)	
IC441	8-759-634-51	IC M5218AP	
IC461	8-759-356-03	IC BA6780	
IC901	8-759-288-53	IC LA5617	
IC902	8-759-071-48	IC M5F7807S (F100/FR1)	
IC902	8-759-604-86	IC M5F7807L (F50)	
IC903	8-759-231-53	IC TA7805S	
IC904	8-759-604-39	IC M5F78M12 (F50/F100)	
IC904	8-759-231-58	IC TA7812S (FR1)	
IC1501	8-759-363-21	IC HA12203NT	
IC1502	8-759-822-09	IC LB1641	
		< JACK >	
J101	1-695-188-31	JACK, PIN 4P (VIDEO/MD (AUDIO))	
J241	1-770-377-31	JACK, PIN 1P (SUPER WOOFER) (F100/FR1)	
		< COIL >	
L131	1-420-872-00	COIL, AIR-CORE	
L181	1-420-872-00	COIL, AIR-CORE	
L301	1-410-509-11	INDUCTOR 10uH	
L401	1-410-509-11	INDUCTOR 10uH	
L402	1-410-509-11	INDUCTOR 10uH	
L457	1-410-509-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q101	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q142	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA (F100/FR1: E, SP, AUS)	
Q142	8-729-119-78	TRANSISTOR 2SC403SP-51 (F50/FR1: AEP, UK, G)	
Q143	8-729-119-76	TRANSISTOR 2SA1175-HFE (F100/FR1)	
Q151	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q191	8-729-119-76	TRANSISTOR 2SA1175-HFE (F100/FR1)	
Q192	8-729-111-29	TRANSISTOR 2SD1616A-K (F100/FR1)	
Q202	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q203	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q204	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q231	8-729-900-63	TRANSISTOR DTA124ES	
Q232	8-729-900-63	TRANSISTOR DTA124ES	
Q241	8-729-141-30	TRANSISTOR 2SC3623A-LK (F100/FR1)	
Q252	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q253	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q254	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q281	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q282	8-729-900-63	TRANSISTOR DTA124ES	
Q283	8-729-900-63	TRANSISTOR DTA124ES	
Q301	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q401	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q402	8-729-900-36	TRANSISTOR DTC124ES	
Q411	8-729-900-36	TRANSISTOR DTC124ES	
Q441	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q491	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q901	8-729-040-20	TRANSISTOR RT1P137L-TP	
Q902	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q903	8-729-030-18	TRANSISTOR 2SD2525	
Q904	8-729-030-19	TRANSISTOR 2SB1640	
Q905	8-729-040-20	TRANSISTOR RT1P137L-TP	
Q906	8-729-900-63	TRANSISTOR DTA124ES	
Q907	8-729-119-78	TRANSISTOR 2SC403SP-51	
Q1531	8-729-801-93	TRANSISTOR 2SD1387	
Q1532	8-729-900-80	TRANSISTOR DTC114ES	
Q1533	8-729-900-80	TRANSISTOR DTC114ES	
Q1534	8-729-119-77	TRANSISTOR 2SA1175-FEK	
Q1535	8-729-900-80	TRANSISTOR DTC114ES	

Ref. No.	Part No.	Description				Remark
		< RESISTOR >				
R121	1-249-424-11	CARBON	3.9K	5%	1/4W	
R122	1-247-887-00	CARBON	220K	5%	1/4W	
R123	1-249-426-11	CARBON	5.6K	5%	1/4W	
R124	1-249-429-11	CARBON	10K	5%	1/4W	
R126	1-249-417-11	CARBON	1K	5%	1/4W	
R127	1-249-441-11	CARBON	100K	5%	1/4W	
R131	1-260-076-11	CARBON	10	5%	1/2W	
R132	1-260-076-11	CARBON	10	5%	1/2W	(FR1: AEP, UK, G)
R133	1-260-091-11	CARBON	220	5%	1/2W	(F50)
R133	1-260-093-11	CARBON	330	5%	1/2W	(FR1: AEP, UK, G)
R133	1-260-095-11	CARBON	470	5%	1/2W	(F100/FR1: E, SP, AUS)
R134	1-260-091-11	CARBON	220	5%	1/2W	(F50)
R134	1-260-093-11	CARBON	330	5%	1/2W	(FR1: AEP, UK, G)
R134	1-260-095-11	CARBON	470	5%	1/2W	(F100/FR1: E, SP, AUS)
R141	1-249-429-11	CARBON	10K	5%	1/4W	
R143	1-249-433-11	CARBON	22K	5%	1/4W	(F100/FR1)
R144	1-249-417-11	CARBON	1K	5%	1/4W	
⚠R147	1-215-893-11	METAL OXIDE	1.5K	5%	2W F	(F100/FR1: E, SP, AUS)
⚠R147	1-216-456-00	METAL OXIDE	820	5%	2W F	(F50/FR1: AEP, UK, G)
R148	1-247-899-11	CARBON	680K	5%	1/4W	(F100/FR1)
R149	1-247-887-00	CARBON	220K	5%	1/4W	(F100/FR1)
R171	1-249-424-11	CARBON	3.9K	5%	1/4W	
R172	1-247-887-00	CARBON	220K	5%	1/4W	
R173	1-249-426-11	CARBON	5.6K	5%	1/4W	
R174	1-249-429-11	CARBON	10K	5%	1/4W	
R176	1-249-417-11	CARBON	1K	5%	1/4W	
R177	1-249-441-11	CARBON	100K	5%	1/4W	
R181	1-260-076-11	CARBON	10	5%	1/2W	
R182	1-260-076-11	CARBON	10	5%	1/2W	(FR1: AEP, UK, G)
R183	1-260-091-11	CARBON	220	5%	1/2W	(F50)
R183	1-260-093-11	CARBON	330	5%	1/2W	(FR1: AEP, UK, G)
R183	1-260-095-11	CARBON	470	5%	1/2W	(F100/FR1: E, SP, AUS)
R184	1-260-091-11	CARBON	220	5%	1/2W	(F50)
R184	1-260-093-11	CARBON	330	5%	1/2W	(FR1: AEP, UK, G)
R184	1-260-095-11	CARBON	470	5%	1/2W	(F100/FR1: E, SP, AUS)
R191	1-249-425-11	CARBON	4.7K	5%	1/4W	(F100/FR1)
R192	1-249-441-11	CARBON	100K	5%	1/4W	(F100/FR1)
R193	1-249-421-11	CARBON	2.2K	5%	1/4W	(F100/FR1)
R194	1-249-437-11	CARBON	47K	5%	1/4W	(F100/FR1)
R195	1-249-437-11	CARBON	47K	5%	1/4W	(F100/FR1)
R199	1-247-807-31	CARBON	100	5%	1/4W	(EXCEPT FR1: SP)
R201	1-247-856-00	CARBON	11K	5%	1/4W	(FR1: SP)
R202	1-249-433-11	CARBON	22K	5%	1/4W	(FR1: SP)
R203	1-249-441-11	CARBON	100K	5%	1/4W	
R204	1-249-441-11	CARBON	100K	5%	1/4W	
R205	1-249-433-11	CARBON	22K	5%	1/4W	(FR1: SP)
R207	1-249-431-11	CARBON	15K	5%	1/4W	
R208	1-249-437-11	CARBON	47K	5%	1/4W	(F100/FR1)
R209	1-249-441-11	CARBON	100K	5%	1/4W	
R210	1-247-899-11	CARBON	680K	5%	1/4W	(F50)
R210	1-247-903-00	CARBON	1M	5%	1/4W	(F100/FR1)
R212	1-249-419-11	CARBON	1.5K	5%	1/4W	
R213	1-249-433-11	CARBON	22K	5%	1/4W	
R214	1-247-887-00	CARBON	220K	5%	1/4W	
R215	1-247-903-00	CARBON	1M	5%	1/4W	
R216	1-249-429-11	CARBON	10K	5%	1/4W	
R217	1-249-437-11	CARBON	47K	5%	1/4W	
R218	1-249-429-11	CARBON	10K	5%	1/4W	
R219	1-249-429-11	CARBON	10K	5%	1/4W	
R220	1-249-429-11	CARBON	10K	5%	1/4W	
R221	1-249-425-11	CARBON	4.7K	5%	1/4W	
R222	1-249-425-11	CARBON	4.7K	5%	1/4W	
R223	1-247-807-31	CARBON	100	5%	1/4W	
R226	1-249-421-11	CARBON	2.2K	5%	1/4W	
R227	1-249-441-11	CARBON	100K	5%	1/4W	
R228	1-249-429-11	CARBON	10K	5%	1/4W	
R231	1-249-437-11	CARBON	47K	5%	1/4W	
R232	1-249-437-11	CARBON	47K	5%	1/4W	
R234	1-247-886-11	CARBON	200K	5%	1/4W	
R235	1-249-433-11	CARBON	22K	5%	1/4W	
R236	1-249-437-11	CARBON	47K	5%	1/4W	
R237	1-249-417-11	CARBON	1K	5%	1/4W	
R241	1-249-437-11	CARBON	47K	5%	1/4W	(F100/FR1)
R242	1-247-843-11	CARBON	3.3K	5%	1/4W	(F100/FR1)
R243	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

MAIN

Ref. No.	Part No.	Description			Remark
R244	1-249-425-11	CARBON	4.7K	5%	1/4W (F100/FR1)
R245	1-247-895-00	CARBON	470K	5%	1/4W (F100/FR1)
R247	1-249-429-11	CARBON	10K	5%	1/4W (F100/FR1)
R248	1-247-899-11	CARBON	680K	5%	1/4W
R249	1-247-887-00	CARBON	220K	5%	1/4W
R253	1-249-441-11	CARBON	100K	5%	1/4W
R254	1-249-441-11	CARBON	100K	5%	1/4W
R257	1-249-431-11	CARBON	15K	5%	1/4W
R258	1-249-437-11	CARBON	47K	5%	1/4W (F100/FR1)
R259	1-249-441-11	CARBON	100K	5%	1/4W
R260	1-247-899-11	CARBON	680K	5%	1/4W (F50)
R260	1-247-903-00	CARBON	1M	5%	1/4W (F100/FR1)
R262	1-249-419-11	CARBON	1.5K	5%	1/4W
R263	1-249-433-11	CARBON	22K	5%	1/4W
R264	1-247-887-00	CARBON	220K	5%	1/4W
R265	1-247-903-00	CARBON	1M	5%	1/4W
R266	1-249-429-11	CARBON	10K	5%	1/4W
R267	1-249-437-11	CARBON	47K	5%	1/4W
R271	1-249-425-11	CARBON	4.7K	5%	1/4W
R272	1-249-425-11	CARBON	4.7K	5%	1/4W
R276	1-249-421-11	CARBON	2.2K	5%	1/4W
R277	1-249-441-11	CARBON	100K	5%	1/4W
R278	1-249-429-11	CARBON	10K	5%	1/4W
R280	1-249-433-11	CARBON	22K	5%	1/4W
R281	1-249-429-11	CARBON	10K	5%	1/4W (F100/FR1: E, SP, AUS)
R281	1-249-427-11	CARBON	6.8K	5%	1/4W (F50/FR1: AEP, UK, G)
R282	1-249-429-11	CARBON	10K	5%	1/4W (F100/FR1: E, SP, AUS)
R282	1-249-427-11	CARBON	6.8K	5%	1/4W (F50/FR1: AEP, UK, G)
R283	1-249-435-11	CARBON	33K	5%	1/4W
R284	1-249-397-11	CARBON	22	5%	1/4W
R285	1-249-441-11	CARBON	100K	5%	1/4W
R286	1-249-429-11	CARBON	10K	5%	1/4W
R288	1-249-439-11	CARBON	68K	5%	1/4W
R289	1-249-437-11	CARBON	47K	5%	1/4W
R291	1-249-433-11	CARBON	22K	5%	1/4W
R292	1-249-433-11	CARBON	22K	5%	1/4W
R293	1-249-416-11	CARBON	820	5%	1/4W (F100/FR1: E, SP, AUS)
R293	1-249-417-11	CARBON	1K	5%	1/4W (F50/FR1: AEP, UK, G)
R294	1-249-441-11	CARBON	100K	5%	1/4W
R295	1-247-903-00	CARBON	1M	5%	1/4W
R296	1-249-421-11	CARBON	2.2K	5%	1/4W
R299	1-247-801-31	CARBON	100	5%	1/4W (F50/F100/FR1: E, AUS)
R301	1-249-413-11	CARBON	470	5%	1/4W
R302	1-249-417-11	CARBON	1K	5%	1/4W
R303	1-249-437-11	CARBON	47K	5%	1/4W
R304	1-249-437-11	CARBON	47K	5%	1/4W
R305	1-249-429-11	CARBON	10K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-249-425-11	CARBON	4.7K	5%	1/4W
R311	1-247-897-11	CARBON	560K	5%	1/4W
R325	1-247-843-11	CARBON	3.3K	5%	1/4W (FR1: AEP, UK, G)
R325	1-249-427-11	CARBON	6.8K	5%	1/4W (FR1: E)
R325	1-249-425-11	CARBON	4.7K	5%	1/4W (FR1: AUS)
R326	1-249-427-11	CARBON	6.8K	5%	1/4W (FR1: AEP, UK, G, AUS)
R326	1-249-425-11	CARBON	4.7K	5%	1/4W (FR1: E)
R330	1-247-807-31	CARBON	100	5%	1/4W
R331	1-247-807-31	CARBON	100	5%	1/4W
R339	1-247-807-31	CARBON	100	5%	1/4W
R340	1-247-807-31	CARBON	100	5%	1/4W
R349	1-247-807-31	CARBON	100	5%	1/4W
R350	1-247-807-31	CARBON	100	5%	1/4W
R351	1-247-807-31	CARBON	100	5%	1/4W
R352	1-247-807-31	CARBON	100	5%	1/4W
R353	1-249-429-11	CARBON	10K	5%	1/4W
R354	1-247-843-11	CARBON	3.3K	5%	1/4W
R355	1-247-807-31	CARBON	100	5%	1/4W
R381	1-247-807-31	CARBON	100	5%	1/4W
R401	1-249-437-11	CARBON	47K	5%	1/4W
R402	1-249-437-11	CARBON	47K	5%	1/4W
R403	1-249-425-11	CARBON	4.7K	5%	1/4W
R404	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-429-11	CARBON	10K	5%	1/4W
R406	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-249-429-11	CARBON	10K	5%	1/4W
R410	1-249-429-11	CARBON	10K	5%	1/4W
R411	1-249-437-11	CARBON	47K	5%	1/4W
R412	1-249-437-11	CARBON	47K	5%	1/4W
R414	1-249-429-11	CARBON	10K	5%	1/4W
R415	1-249-437-11	CARBON	47K	5%	1/4W
R416	1-249-425-11	CARBON	4.7K	5%	1/4W
R431	1-249-403-11	CARBON	68	5%	1/4W
R432	1-249-403-11	CARBON	68	5%	1/4W
R433	1-249-437-11	CARBON	47K	5%	1/4W
R434	1-249-437-11	CARBON	47K	5%	1/4W
R438	1-249-429-11	CARBON	10K	5%	1/4W
R439	1-249-425-11	CARBON	4.7K	5%	1/4W
R440	1-249-430-11	CARBON	12K	5%	1/4W
R441	1-249-419-11	CARBON	1.5K	5%	1/4W
R442	1-249-429-11	CARBON	10K	5%	1/4W
R443	1-249-429-11	CARBON	10K	5%	1/4W
R444	1-249-429-11	CARBON	10K	5%	1/4W
R446	1-249-420-11	CARBON	1.8K	5%	1/4W
R451	1-247-807-31	CARBON	100	5%	1/4W
R461	1-249-382-11	CARBON	1.2	5%	1/6W
R462	1-249-382-11	CARBON	1.2	5%	1/6W
R463	1-249-429-11	CARBON	10K	5%	1/4W
R464	1-247-850-11	CARBON	6.2K	5%	1/4W
R465	1-249-429-11	CARBON	10K	5%	1/4W
R466	1-249-428-11	CARBON	8.2K	5%	1/4W
R470	1-249-427-11	CARBON	6.8K	5%	1/4W
R471	1-249-427-11	CARBON	6.8K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R472	1-249-427-11	CARBON	6.8K	5%	1/4W
R488	1-249-429-11	CARBON	10K	5%	1/4W
R489	1-249-425-11	CARBON	4.7K	5%	1/4W
R490	1-249-430-11	CARBON	12K	5%	1/4W
R491	1-249-419-11	CARBON	1.5K	5%	1/4W
R492	1-249-429-11	CARBON	10K	5%	1/4W
R493	1-249-429-11	CARBON	10K	5%	1/4W
R494	1-249-429-11	CARBON	10K	5%	1/4W
R496	1-249-420-11	CARBON	1.8K	5%	1/4W
R901	1-249-437-11	CARBON	47K	5%	1/4W
R902	1-249-437-11	CARBON	47K	5%	1/4W
R913	1-249-409-11	CARBON	220	5%	1/4W
R914	1-249-425-11	CARBON	4.7K	5%	1/4W
R915	1-249-429-11	CARBON	10K	5%	1/4W
R916	1-249-409-11	CARBON	220	5%	1/4W
R917	1-249-409-11	CARBON	220	5%	1/4W
R919	1-247-887-00	CARBON	220K	5%	1/4W
R920	1-249-417-11	CARBON	1K	5%	1/4W
R921	1-247-895-00	CARBON	470K	5%	1/4W
R951	1-249-425-11	CARBON	4.7K	5%	1/4W
R952	1-249-425-11	CARBON	4.7K	5%	1/4W
R1501	1-249-435-11	CARBON	33K	5%	1/4W
R1502	1-249-417-11	CARBON	1K	5%	1/4W
R1503	1-249-426-11	CARBON	5.6K	5%	1/4W
R1504	1-247-840-00	CARBON	2.4K	5%	1/4W
R1505	1-249-433-11	CARBON	22K	5%	1/4W
R1506	1-249-421-11	CARBON	2.2K	5%	1/4W
R1507	1-249-428-11	CARBON	8.2K	5%	1/4W
R1521	1-249-430-11	CARBON	12K	5%	1/4W
R1522	1-249-426-11	CARBON	5.6K	5%	1/4W
R1524	1-249-429-11	CARBON	10K	5%	1/4W
R1525	1-249-432-11	CARBON	18K	5%	1/4W
R1526	1-249-429-11	CARBON	10K	5%	1/4W
R1527	1-249-429-11	CARBON	10K	5%	1/4W
R1529	1-249-441-11	CARBON	100K	5%	1/4W
R1531	1-247-843-11	CARBON	3.3K	5%	1/4W
R1532	1-249-411-11	CARBON	330	5%	1/4W
R1533	1-249-427-11	CARBON	6.8K	5%	1/4W
R1534	1-249-429-11	CARBON	10K	5%	1/4W
R1535	1-249-425-11	CARBON	4.7K	5%	1/4W
R1536	1-249-425-11	CARBON	4.7K	5%	1/4W
R1541	1-249-425-11	CARBON	4.7K	5%	1/4W
R1542	1-249-425-11	CARBON	4.7K	5%	1/4W
R1543	1-249-425-11	CARBON	4.7K	5%	1/4W
R1544	1-249-417-11	CARBON	1K	5%	1/4W
R1545	1-249-437-11	CARBON	47K	5%	1/4W
R1546	1-249-437-11	CARBON	47K	5%	1/4W
R1547	1-249-437-11	CARBON	47K	5%	1/4W
R1548	1-249-437-11	CARBON	47K	5%	1/4W
R1551	1-249-433-11	CARBON	22K	5%	1/4W
R1552	1-249-417-11	CARBON	1K	5%	1/4W
R1553	1-249-426-11	CARBON	5.6K	5%	1/4W
R1554	1-247-840-00	CARBON	2.4K	5%	1/4W
R1555	1-249-433-11	CARBON	22K	5%	1/4W
R1556	1-249-421-11	CARBON	2.2K	5%	1/4W
R1557	1-249-428-11	CARBON	8.2K	5%	1/4W
		< VARIABLE RESISTOR >			
RV402	1-241-768-11	RES, ADJ, CARBON 220K			
RV1501	1-238-598-11	RES, ADJ, CARBON 2.2K			
RV1551	1-238-598-11	RES, ADJ, CARBON 2.2K			
		< RELAY >			
RY141	1-755-141-11	RELAY (24V) (F50/F100/FR1: E, SP, AUS)			
RY141	1-515-920-11	RELAY (24V) (FR1: AEP, UK, G)			
		< TERMINAL >			
TM131	1-694-302-11	TERMINAL BOARD (CHECKER PIN) (SPEAKER) (F50)			
TM131	1-537-240-31	TERMINAL BOARD (CHECKER PIN) (SPEAKER) (F100/FR1: E, SP, AUS)			
TM131	1-537-801-11	TERMINAL BOARD (SPEAKER) (FR1: AEP, UK, G)			
TM132	1-537-240-31	TERMINAL BOARD (CHECKER PIN) (SURROUND SPEAKER) (F100/FR1: E, SP, AUS)			
TM132	1-537-801-11	TERMINAL BOARD (SURROUND SPEAKER) (FR1: AEP, UK, G)			
		< VIBRATOR >			
X301	1-760-489-11	VIBRATOR, CERAMIC (5MHz)			
X302	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			
X401	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
**********					
		MOTOR BOARD			
		**********			
		(Included in AUDIO BOARD, COMPLETE)			
		< CAPACITOR >			
C651	1-161-494-00	CERAMIC	0.022uF		25V
**********					
*	A-4398-388-A	PANEL BOARD, COMPLETE (F100)			
*	A-4398-391-A	PANEL BOARD, COMPLETE (F50)			
*	A-4398-398-A	PANEL BOARD, COMPLETE (FR1: SP)			
*	A-4398-406-A	PANEL BOARD, COMPLETE (FR1: E)			
*	A-4398-411-A	PANEL BOARD, COMPLETE (FR1: AUS)			
*	A-4398-420-A	PANEL BOARD, COMPLETE (FR1: AEP, UK, G)			
		**********			
*	4-990-380-01	HOLDER, FL TUBE			
		< CAPACITOR >			
C601	1-162-294-31	CERAMIC	0.001uF	10%	50V
C602	1-164-159-11	CERAMIC	0.1uF		50V
C603	1-124-221-11	ELECT	10uF	20%	6.3V
C606	1-126-160-11	ELECT	1uF	20%	50V
C610	1-162-282-31	CERAMIC	100PF	10%	50V
C611	1-162-282-31	CERAMIC	100PF	10%	50V
C612	1-162-282-31	CERAMIC	100PF	10%	50V
C613	1-162-282-31	CERAMIC	100PF	10%	50V
C614	1-162-282-31	CERAMIC	100PF	10%	50V
C615	1-162-282-31	CERAMIC	100PF	10%	50V
C616	1-162-282-31	CERAMIC	100PF	10%	50V
C617	1-162-282-31	CERAMIC	100PF	10%	50V
C618	1-162-282-31	CERAMIC	100PF	10%	50V
C619	1-162-282-31	CERAMIC	100PF	10%	50V
C620	1-162-282-31	CERAMIC	100PF	10%	50V
C621	1-162-282-31	CERAMIC	100PF	10%	50V
C622	1-162-282-31	CERAMIC	100PF	10%	50V
C623	1-162-282-31	CERAMIC	100PF	10%	50V

PANEL

Ref. No.	Part No.	Description				Remark
C624	1-162-289-31	CERAMIC	390PF	10%	50V	
C625	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C626	1-126-933-11	ELECT	100uF	20%	10V	
C627	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C628	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C629	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C630	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C633	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C634	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C635	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C636	1-126-160-11	ELECT	1uF	20%	50V	
C637	1-164-159-11	CERAMIC	0.1uF		50V	
C638	1-136-169-00	FILM	0.22uF	5%	50V	
C639	1-136-169-00	FILM	0.22uF	5%	50V	
C640	1-162-306-11	CERAMIC	0.01uF	20%	16V	
C641	1-136-169-00	FILM	0.22uF	5%	50V	
C642	1-136-159-00	FILM	0.033uF	5%	50V	
C643	1-162-302-11	CERAMIC	0.0022uF	30%	16V	
C644	1-136-169-00	FILM	0.22uF	5%	50V	
C646	1-162-293-31	CERAMIC	820PF	10%	50V	
C647	1-136-169-00	FILM	0.22uF	5%	50V	
C648	1-164-159-11	CERAMIC	0.1uF		50V	
C649	1-126-154-11	ELECT	47uF	20%	6.3V	
C650	1-136-169-00	FILM	0.22uF	5%	50V	
C651	1-164-159-11	CERAMIC	0.1uF		50V	
		< CONNECTOR >				
CN601	1-568-834-11	SOCKET, CONNECTOR 15P (EXCEPT FR1: SP)				
CN601	1-568-802-11	SOCKET, CONNECTOR 19P (FR1: SP)				
* CN602	1-568-450-11	HOUSING, CONNECTOR (PC BOARD) 4P (EXCEPT FR1: SP)				
* CN602	1-566-970-11	HOUSING, CONNECTOR (PC BOARD) 8P (FR1: SP)				
		< DIODE >				
D601	8-719-058-64	LED	SEL5823A-TP15 (MEMO SEARCH) (F100/FR1)			
D602	8-719-058-64	LED	SEL5823A-TP15 (MEMO SCAN) (F100/FR1)			
D603	8-719-058-64	LED	SEL5823A-TP15 (CD PLUS1)			
D604	8-719-058-64	LED	SEL5823A-TP15 (GROOVE)			
D605	8-719-058-64	LED	SEL5823A-TP15 (TUNER/BAND)			
D606	8-719-058-64	LED	SEL5823A-TP15 (TAPE A)			
D607	8-719-057-39	LED	HLMF-K505-2UL (▶)			
D608	8-719-057-39	LED	HLMF-K505-2UL (◀)			
D609	8-719-058-64	LED	SEL5823A-TP15 (TAPE B)			
D610	8-719-057-39	LED	HLMF-K505-2UL (▶)			
D611	8-719-057-39	LED	HLMF-K505-2UL (◀)			
D612	8-719-058-64	LED	SEL5823A-TP15 (CD)			
D613	8-719-057-39	LED	HLMF-K505-2UL (▶)			
D614	8-719-301-59	LED	SEL2910A (❚❚)			
D615	8-719-058-04	LED	SEL5223S-TP15 (ENTER)			
D616	8-719-058-64	LED	SEL5823A-TP15 (+ ▶▶ ▶▶❙)			
D617	8-719-058-64	LED	SEL5823A-TP15 (– ◀◀ ❙◀◀)			
D620	8-719-057-30	LED	HLMF-K205-2UL (EFFECT)			
D621	8-719-058-04	LED	SEL5223S-TP15 (REC)			
D622	8-719-057-97	LED	SEL5923A-TP15 (PAUSE)			
D630	8-719-987-63	DIODE	1N4148M			
D649	8-719-987-63	DIODE	1N4148M			
D650	8-719-987-63	DIODE	1N4148M			
D651	8-719-987-63	DIODE	1N4148M			
D652	8-719-987-63	DIODE	1N4148M			
D653	8-719-987-63	DIODE	1N4148M			
D654	8-719-987-63	DIODE	1N4148M			
D655	8-719-987-63	DIODE	1N4148M			
D656	8-719-987-63	DIODE	1N4148M			
		< FLUORESCENT INDICATOR TUBE >				
FL601	1-517-651-11	INDICATOR TUBE, FLUORESCENT				
		< IC >				
IC601	8-759-462-23	IC	TMP87CM75F-6541			
IC602	8-759-339-53	IC	GP1U28XB			
		< COIL >				
L601	1-410-509-11	INDUCTOR	10uH			
		< TRANSISTOR >				
Q601	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q602	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q604	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q605	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q606	8-729-119-76	TRANSISTOR	2SA1175-HFE			
Q611	8-729-119-78	TRANSISTOR	2SC403SP-51			
		< RESISTOR >				
R601	1-247-903-00	CARBON	1M	5%	1/4W	
R602	1-247-807-31	CARBON	100	5%	1/4W	
R606	1-249-437-11	CARBON	47K	5%	1/4W	
R607	1-249-437-11	CARBON	47K	5%	1/4W	
R608	1-247-843-11	CARBON	3.3K	5%	1/4W	
R609	1-247-843-11	CARBON	3.3K	5%	1/4W	
R610	1-249-425-11	CARBON	4.7K	5%	1/4W	
R611	1-249-429-11	CARBON	10K	5%	1/4W	
R613	1-249-425-11	CARBON	4.7K	5%	1/4W (F50)	
R613	1-249-433-11	CARBON	22K	5%	1/4W (F100/FR1)	
R614	1-249-427-11	CARBON	6.8K	5%	1/4W (F50)	
R614	1-249-433-11	CARBON	22K	5%	1/4W (F100/FR1)	
R615	1-249-437-11	CARBON	47K	5%	1/4W	
R616	1-249-437-11	CARBON	47K	5%	1/4W	
R617	1-249-429-11	CARBON	10K	5%	1/4W	
R619	1-249-401-11	CARBON	47	5%	1/4W	
R621	1-249-419-11	CARBON	1.5K	5%	1/4W	
R622	1-249-401-11	CARBON	47	5%	1/4W	
R623	1-249-403-11	CARBON	68	5%	1/4W	
R624	1-247-807-31	CARBON	100	5%	1/4W	
R625	1-249-407-11	CARBON	150	5%	1/4W	
R626	1-249-407-11	CARBON	150	5%	1/4W	
R627	1-249-409-11	CARBON	220	5%	1/4W	
R628	1-249-411-11	CARBON	330	5%	1/4W	
R629	1-249-413-11	CARBON	470	5%	1/4W	

Ref. No.	Part No.	Description			Remark
R630	1-249-415-11	CARBON	680	5%	1/4W
R631	1-249-417-11	CARBON	1K	5%	1/4W
R632	1-249-419-11	CARBON	1.5K	5%	1/4W
R633	1-249-421-11	CARBON	2.2K	5%	1/4W
R634	1-247-843-11	CARBON	3.3K	5%	1/4W (F100/FR1)
R635	1-249-427-11	CARBON	6.8K	5%	1/4W (F100/FR1)
R636	1-249-431-11	CARBON	15K	5%	1/4W (F100/FR1)
R637	1-249-413-11	CARBON	470	5%	1/4W
R638	1-249-419-11	CARBON	1.5K	5%	1/4W
R639	1-249-401-11	CARBON	47	5%	1/4W
R640	1-249-403-11	CARBON	68	5%	1/4W
R641	1-247-807-31	CARBON	100	5%	1/4W
R642	1-249-407-11	CARBON	150	5%	1/4W
R643	1-249-407-11	CARBON	150	5%	1/4W
R644	1-249-409-11	CARBON	220	5%	1/4W
R645	1-249-411-11	CARBON	330	5%	1/4W
R646	1-249-413-11	CARBON	470	5%	1/4W
R647	1-249-415-11	CARBON	680	5%	1/4W
R648	1-249-417-11	CARBON	1K	5%	1/4W
R649	1-249-419-11	CARBON	1.5K	5%	1/4W
R650	1-249-421-11	CARBON	2.2K	5%	1/4W
R651	1-247-843-11	CARBON	3.3K	5%	1/4W
R652	1-249-427-11	CARBON	6.8K	5%	1/4W
R653	1-249-431-11	CARBON	15K	5%	1/4W
R654	1-249-419-11	CARBON	1.5K	5%	1/4W
R655	1-249-401-11	CARBON	47	5%	1/4W
R656	1-249-403-11	CARBON	68	5%	1/4W
R657	1-247-807-31	CARBON	100	5%	1/4W
R658	1-249-407-11	CARBON	150	5%	1/4W
R659	1-249-407-11	CARBON	150	5%	1/4W
R660	1-249-409-11	CARBON	220	5%	1/4W
R661	1-249-411-11	CARBON	330	5%	1/4W
R663	1-249-409-11	CARBON	220	5%	1/4W
R664	1-249-409-11	CARBON	220	5%	1/4W (F100/FR1)
R666	1-249-409-11	CARBON	220	5%	1/4W
R667	1-249-409-11	CARBON	220	5%	1/4W
R669	1-249-409-11	CARBON	220	5%	1/4W
R670	1-249-409-11	CARBON	220	5%	1/4W
R672	1-249-409-11	CARBON	220	5%	1/4W
R673	1-249-409-11	CARBON	220	5%	1/4W
R675	1-249-409-11	CARBON	220	5%	1/4W
R676	1-249-409-11	CARBON	220	5%	1/4W
R677	1-249-409-11	CARBON	220	5%	1/4W
R678	1-249-402-11	CARBON	56	5%	1/4W
R680	1-249-409-11	CARBON	220	5%	1/4W
R681	1-249-409-11	CARBON	220	5%	1/4W
R682	1-249-409-11	CARBON	220	5%	1/4W
R683	1-249-434-11	CARBON	27K	5%	1/4W
R684	1-247-895-00	CARBON	470K	5%	1/4W
R685	1-249-419-11	CARBON	1.5K	5%	1/4W
R686	1-247-897-11	CARBON	560K	5%	1/4W
R687	1-249-437-11	CARBON	47K	5%	1/4W
R688	1-247-895-00	CARBON	470K	5%	1/4W
R689	1-249-419-11	CARBON	1.5K	5%	1/4W
R690	1-247-897-11	CARBON	560K	5%	1/4W
R691	1-249-437-11	CARBON	47K	5%	1/4W
R692	1-247-895-00	CARBON	470K	5%	1/4W
R693	1-249-419-11	CARBON	1.5K	5%	1/4W
R694	1-247-897-11	CARBON	560K	5%	1/4W
R695	1-249-437-11	CARBON	47K	5%	1/4W
R696	1-247-895-00	CARBON	470K	5%	1/4W
R698	1-247-897-11	CARBON	560K	5%	1/4W
R699	1-249-437-11	CARBON	47K	5%	1/4W
R700	1-247-895-00	CARBON	470K	5%	1/4W

< SWITCH >

S601	1-475-296-11	ENCODER, ROTARY (JOG)
S602	1-467-869-11	ENCODER, ROTARY (VOLUME)
S603	1-571-760-11	SWITCH, KEY BOARD (GROOVE)
S604	1-762-751-11	SWITCH, TACTILE (SPECTRUM ANALYZER)
S605	1-762-751-11	SWITCH, TACTILE (DISPLAY/DEMO)
S606	1-762-751-11	SWITCH, TACTILE (◴/CLOCK SET)
S607	1-762-751-11	SWITCH, TACTILE (TIMER SELECT)
S608	1-762-751-11	SWITCH, TACTILE (CD PLUS1)
S609	1-762-751-11	SWITCH, TACTILE (CONTINUE TUNING MODE)
S610	1-762-751-11	SWITCH, TACTILE (SHUFFLE STEREO/MONO)
S611	1-762-751-11	SWITCH, TACTILE (PROGRAM TUNER MEMORY)
S612	1-762-751-11	SWITCH, TACTILE (FLASH)
S613	1-762-751-11	SWITCH, TACTILE (REPEAT)
S614	1-762-751-11	SWITCH, TACTILE (CLEAR)
S615	1-762-751-11	SWITCH, TACTILE (CHECK)
S616	1-762-751-11	SWITCH, TACTILE (MEMO INPUT) (F100/FR1)
S617	1-762-751-11	SWITCH, TACTILE (MEMO SCAN) (F100/FR1)
S618	1-762-751-11	SWITCH, TACTILE (MEMO SEARCH) (F100/FR1)
S619	1-762-751-11	SWITCH, TACTILE (FUNCTION)
S620	1-762-751-11	SWITCH, TACTILE (■ STOP)
S621	1-762-751-11	SWITCH, TACTILE (EFFECT)
S622	1-762-751-11	SWITCH, TACTILE (– ◀◀ I◀◀)
S623	1-762-751-11	SWITCH, TACTILE (+ ▶▶ ▶▶I)
S624	1-762-751-11	SWITCH, TACTILE (ENTER)
S625	1-762-751-11	SWITCH, TACTILE (GEQ FILE)
S626	1-762-751-11	SWITCH, TACTILE (GEQ MEMO)
S627	1-571-760-11	SWITCH, KEY BOARD (TAPE B ◀)
S628	1-571-760-11	SWITCH, KEY BOARD (TAPE A ◀)
S629	1-571-760-11	SWITCH, KEY BOARD (TUNER BAND)
S630	1-571-760-11	SWITCH, KEY BOARD (TAPE A ▶)
S631	1-571-760-11	SWITCH, KEY BOARD (TAPE B ▶)
S632	1-571-760-11	SWITCH, KEY BOARD (CD ▶ ❚❚)
S633	1-762-751-11	SWITCH, TACTILE (SUR)
S634	1-571-760-11	SWITCH, KEY BOARD (DBFB)
S635	1-762-751-11	SWITCH, TACTILE (LOOP)
S636	1-762-751-11	SWITCH, TACTILE (POWER)
S637	1-762-751-11	SWITCH, TACTILE (KARAOKE-PON/MPX) (FR1: SP)
S638	1-762-751-11	SWITCH, TACTILE (PAUSE ❚❚)
S639	1-762-751-11	SWITCH, TACTILE (REC ●)
S640	1-762-751-11	SWITCH, TACTILE (HI-SPEED DUBBING)
S641	1-762-751-11	SWITCH, TACTILE (CD SYNCHRO)
S642	1-762-751-11	SWITCH, TACTILE (DOLBY NR)
S643	1-762-751-11	SWITCH, TACTILE (DIRECTION)

< VIBRATOR >

X601	1-579-125-11	VIBRATOR, CERAMIC (8MHz)

****

POWER AMP

Ref. No.	Part No.	Description	Remark
*	A-4398-376-A	POWER AMP BOARD, COMPLETE (F50)	
*	A-4398-382-A	POWER AMP BOARD, COMPLETE (F100: US)	
*	A-4398-403-A	POWER AMP BOARD, COMPLETE	(FR1: E, SP, AUS)
*	A-4398-416-A	POWER AMP BOARD, COMPLETE	(FR1: AEP, UK, G)
*	A-4398-748-A	POWER AMP BOARD, COMPLETE (F100: CND)	
		**********	
		< CAPACITOR >	
C801	1-128-582-11	ELECT 10uF 20% 100V	(F100)
C801	1-126-963-11	ELECT 4.7uF 20% 50V	(F50/FR1)
C802	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C803	1-162-286-31	CERAMIC 220PF 10% 50V	
C804	1-126-967-11	ELECT 47uF 20% 50V	
C806	1-126-967-11	ELECT 47uF 20% 50V	
C807	1-128-560-11	ELECT 22uF 20% 100V	(F100/FR1: E, SP, AUS)
C807	1-126-968-11	ELECT 100uF 20% 50V	(F50/FR1: AEP, UK, G)
C809	1-128-560-11	ELECT 22uF 20% 100V	(F100/FR1: E, SP, AUS)
C809	1-126-965-11	ELECT 22uF 20% 50V	(F50/FR1: AEP, UK, G)
C811	1-130-493-00	MYLAR 0.068uF 5% 50V	
C812	1-130-493-00	MYLAR 0.068uF 5% 50V	
C817	1-164-159-11	CERAMIC 0.1uF 50V	(FR1: AEP, UK, G)
C818	1-162-294-31	CERAMIC 0.001uF 10% 50V	(FR1: AEP, UK, G)
C841	1-126-925-11	ELECT 470uF 20% 10V	
C842	1-164-159-11	CERAMIC 0.1uF 50V	
C851	1-128-582-11	ELECT 10uF 20% 100V	(F100)
C851	1-126-963-11	ELECT 4.7uF 20% 50V	(F50/FR1)
C852	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C853	1-162-286-31	CERAMIC 220PF 10% 50V	
C854	1-126-967-11	ELECT 47uF 20% 50V	
C856	1-126-967-11	ELECT 47uF 20% 50V	
C857	1-128-560-11	ELECT 22uF 20% 100V	(F100/FR1: E, SP, AUS)
C857	1-126-968-11	ELECT 100uF 20% 50V	(F50/FR1: AEP, UK, G)
C861	1-130-493-00	MYLAR 0.068uF 5% 50V	
C862	1-130-493-00	MYLAR 0.068uF 5% 50V	
		< CONNECTOR >	
CN802	1-564-511-11	PLUG, CONNECTOR 8P	
		< DIODE >	
D801	8-719-815-85	DIODE 1S1585 (F100/FR1: E, SP, AUS)	
D801	8-719-987-63	DIODE 1N4148M (F50/FR1: AEP, UK, G)	
D841	8-719-987-63	DIODE 1N4148M	
D842	8-719-987-63	DIODE 1N4148M	
D851	8-719-815-85	DIODE 1S1585 (F100/FR1: E, SP, AUS)	
D851	8-719-987-63	DIODE 1N4148M (F50/FR1: AEP, UK, G)	
		< GROUND TERMINAL >	
EPT2	1-537-770-21	TERMINAL BOARD, GROUND	
		< IC >	
IC801	8-749-922-65	IC STK-4221MK2 (F100: US/FR1: E, SP, AUS)	
IC801	8-749-921-04	IC STK-4211MK-2 (F100: CND)	
IC801	8-749-900-34	IC STK-4182MK2 (FR1: AEP, UK, G)	
IC801	8-749-920-10	IC STK-4172MK2 (F50)	
		< TRANSISTOR >	
Q801	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
Q831	8-729-900-36	TRANSISTOR DTC124ES (F100/FR1)	
Q832	8-729-119-78	TRANSISTOR 2SC403SP-51 (F100/FR1)	
Q851	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA	
		< RESISTOR >	
R801	1-249-417-11	CARBON 1K 5% 1/4W	
R802	1-249-437-11	CARBON 47K 5% 1/4W	
R803	1-249-413-11	CARBON 470 5% 1/4W	(F100/FR1: E, SP, AUS)
R803	1-249-415-11	CARBON 680 5% 1/4W	(F50/FR1: AEP, UK, G)
R804	1-249-437-11	CARBON 47K 5% 1/4W	
R805	1-249-429-11	CARBON 10K 5% 1/4W	(F100/FR1: E, SP, AUS)
R805	1-249-427-11	CARBON 6.8K 5% 1/4W	(F50/FR1: AEP, UK, G)
R806	1-249-429-11	CARBON 10K 5% 1/4W	(F100/FR1: E, SP, AUS)
R806	1-249-427-11	CARBON 6.8K 5% 1/4W	(F50/FR1: AEP, UK, G)
⚠R807	1-212-881-11	FUSIBLE 100 5% 1/4W F	
⚠R808	1-217-156-00	WIREWOUND 0.22 10% 5W F	(F100/FR1: E, SP, AUS)
⚠R808	1-208-602-11	WIREWOUND 0.22 10% 2W F	(F50/FR1: AEP, UK, G)
R809	1-249-397-11	CARBON 22 5% 1/4W	
R811	1-249-417-11	CARBON 1K 5% 1/4W	
R812	1-249-431-11	CARBON 15K 5% 1/4W	
R813	1-249-441-11	CARBON 100K 5% 1/4W	
R814	1-260-105-11	CARBON 3.3K 5% 1/2W	(F100/FR1: E, SP, AUS)
R814	1-260-099-11	CARBON 1K 5% 1/2W	(F50/FR1: AEP, UK, G)
R816	1-260-105-11	CARBON 3.3K 5% 1/2W	(F100/FR1: E, SP, AUS)
R816	1-260-099-11	CARBON 1K 5% 1/2W	(F50/FR1: AEP, UK, G)
R820	1-249-393-11	CARBON 10 5% 1/4W	
R825	1-249-429-11	CARBON 10K 5% 1/4W	(F100/FR1: E, SP, AUS)

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Ref. No.	Part No.	Description				Remark
R825	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
R826	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R826	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
R829	1-249-397-11	CARBON	22	5%	1/4W	
R831	1-249-441-11	CARBON	100K	5%	1/4W	(F100/FR1)
R832	1-249-441-11	CARBON	100K	5%	1/4W	(F100/FR1)
R833	1-249-441-11	CARBON	100K	5%	1/4W	(F100/FR1)
R841	1-249-427-11	CARBON	6.8K	5%	1/4W	
R842	1-247-891-00	CARBON	330K	5%	1/4W	(F100/FR1: E, SP, AUS)
R842	1-247-881-00	CARBON	120K	5%	1/4W	(F50/FR1: AEP, UK, G)
R843	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R843	1-249-421-11	CARBON	2.2K	5%	1/4W	(F50/FR1: AEP, UK, G)
R851	1-249-417-11	CARBON	1K	5%	1/4W	
R852	1-249-437-11	CARBON	47K	5%	1/4W	
R853	1-249-413-11	CARBON	470	5%	1/4W	(F100/FR1: E, SP, AUS)
R853	1-249-415-11	CARBON	680	5%	1/4W	(F50/FR1: AEP, UK, G)
R854	1-249-437-11	CARBON	47K	5%	1/4W	
R855	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R855	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
R856	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R856	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
⚠R857	1-212-881-11	FUSIBLE	100	5%	1/4W F	
⚠R858	1-217-156-00	WIREWOUND	0.22	10%	5W F	(F100/FR1: E, SP, AUS)
⚠R858	1-208-602-11	WIREWOUND	0.22	10%	2W F	(F50/FR1: AEP, UK, G)
R859	1-249-397-11	CARBON	22	5%	1/4W	
R861	1-249-417-11	CARBON	1K	5%	1/4W	
R862	1-249-431-11	CARBON	15K	5%	1/4W	
R863	1-249-441-11	CARBON	100K	5%	1/4W	
R875	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R875	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
R876	1-249-429-11	CARBON	10K	5%	1/4W	(F100/FR1: E, SP, AUS)
R876	1-249-427-11	CARBON	6.8K	5%	1/4W	(F50/FR1: AEP, UK, G)
R879	1-249-397-11	CARBON	22	5%	1/4W	

Ref. No.	Part No.	Description				Remark
		< THERMISTOR >				
TH801	1-807-796-11	THERMISTOR 10K (F100/FR1)				
**********						
*	1-663-975-11	SW BOARD				
		**********				
		< CONNECTOR >				
* CN54	1-568-941-11	PIN, CONNECTOR 3P				
		< SWITCH >				
S51	1-571-958-11	SWITCH, PUSH (1 KEY) (UP)				
S52	1-571-958-11	SWITCH, PUSH (1 KEY) (DOWN)				
**********						
*	1-663-971-11	TABLE SENSOR BOARD				
		**********				
		< CONNECTOR >				
* CN51	1-568-944-11	PIN, CONNECTOR 6P				
CN52	1-506-481-11	PIN, CONNECTOR 2P				
		< IC >				
IC51	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
IC52	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
IC53	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391				
		< RESISTOR >				
R51	1-249-416-11	CARBON	820	5%	1/4W	
R52	1-249-416-11	CARBON	820	5%	1/4W	
R53	1-249-416-11	CARBON	820	5%	1/4W	
**********						
*	A-4303-574-A	TCB BOARD, COMPLETE (FR1: AEP, UK, G)				
		**********				
		< CAPACITOR >				
C1	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V	
C2	1-126-967-11	ELECT	47uF	20%	16V	
C3	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C5	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C6	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C8	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C9	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C10	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C16	1-163-038-00	CERAMIC CHIP	0.1uF		25V	
C19	1-163-249-11	CERAMIC CHIP	82PF	5%	50V	
C21	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V	
C22	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C23	1-163-235-11	CERAMIC CHIP	22PF	5%	50V	
C24	1-163-239-11	CERAMIC CHIP	33PF	5%	50V	
C26	1-126-967-11	ELECT	47uF	20%	16V	
C28	1-126-967-11	ELECT	47uF	20%	16V	
C29	1-162-306-11	CERAMIC	0.01uF	30%	16V	
C30	1-126-961-11	ELECT	2.2uF	20%	50V	
C31	1-163-031-11	CERAMIC CHIP	0.01uF		50V	

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TCB

Ref. No.	Part No.	Description			Remark
C32	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C33	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C34	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C35	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C36	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C37	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C39	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C40	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C41	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C42	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C43	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C44	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C45	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C46	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C47	1-126-967-11	ELECT	47uF	20%	16V
C48	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C49	1-126-959-11	ELECT	0.47uF	20%	50V
C50	1-126-960-11	ELECT	1uF	20%	50V
C51	1-126-960-11	ELECT	1uF	20%	50V
C52	1-126-963-11	ELECT	4.7uF	20%	50V
C53	1-126-964-11	ELECT	10uF	20%	50V
C54	1-104-396-11	ELECT	10uF	20%	16V
C55	1-104-396-11	ELECT	10uF	20%	16V
C56	1-104-396-11	ELECT	10uF	20%	16V
C57	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C58	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C59	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C60	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C61	1-126-301-11	ELECT	1uF	20%	50V
C62	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C63	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C64	1-126-967-11	ELECT	47uF	20%	16V
C65	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C66	1-126-162-11	ELECT	3.3uF	20%	50V
C67	1-126-933-11	ELECT	100uF	20%	10V
C68	1-162-306-11	CERAMIC	0.01uF	30%	16V
C71	1-162-306-11	CERAMIC	0.01uF	30%	16V
C72	1-126-967-11	ELECT	47uF	20%	16V
C120	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
		< FILTER >			
CF1	1-567-389-11	FILTER, CERAMIC			
CF2	1-760-393-11	FILTER, CERAMIC			
CF3	1-760-393-11	FILTER, CERAMIC			
		< CONNECTOR >			
* CN1	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P			
		< DIODE >			
D21	8-719-976-99	DIODE DTZ5.1B			
D41	8-719-016-74	DIODE 1SS352			

Ref. No.	Part No.	Description	Remark
		< FRONT END >	
FE1	1-693-357-11	FRONT END (4 GAND)	
FE2	1-233-514-11	ENCAPSULATED COMPONENT	
		< IC >	
IC21	8-759-288-54	IC LC72130	
IC41	8-759-176-03	IC LA1835	
		< IFT >	
IFT41	1-409-636-11	TRANSFORMER, IF (CERAMICFILTER)	
		< CHIP CONDUCTOR >	
JR2	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR6	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR8	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR9	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR45	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR46	1-216-296-00	CONDUCTOR, CHIP (3216)	
JR47	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR48	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR49	1-216-296-00	CONDUCTOR, CHIP (3216)	
JR51	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR52	1-216-295-00	CONDUCTOR, CHIP (2012)	
JR53	1-216-296-00	CONDUCTOR, CHIP (3216)	
JR54	1-216-295-00	CONDUCTOR, CHIP (2012)	
		< JUMPER RESISTOR >	
JW4	1-249-413-11	CARBON 470 5% 1/4W	
JW5	1-249-413-11	CARBON 470 5% 1/4W	
		< COIL >	
L2	1-414-142-11	INDUCTOR, MICRO 1uH	
L3	1-410-521-11	INDUCTOR, MICRO 100uH	
L4	1-410-515-11	INDUCTOR, MICRO 33uH	
L41	1-407-500-00	MICRO INDUCTOR 4.7mH	
		< LOW PASS FILTER >	
LPF41	1-239-845-11	FILTER, LOW PASS	
LPF42	1-239-845-11	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q2	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q3	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q4	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q5	8-729-424-08	TRANSISTOR MUN2111T1	
Q9	8-729-216-22	TRANSISTOR 2SA1162-G	
Q11	8-729-421-22	TRANSISTOR MUN2211T1	
Q12	8-729-421-22	TRANSISTOR MUN2211T1	
Q13	8-729-421-22	TRANSISTOR MUN2211T1	
Q14	8-729-421-22	TRANSISTOR MUN2211T1	

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R1	1-249-401-11	CARBON	47	5%	1/4W
R2	1-216-037-00	METAL CHIP	330	5%	1/10W
R3	1-216-037-00	METAL CHIP	330	5%	1/10W
R5	1-216-037-00	METAL CHIP	330	5%	1/10W
R6	1-216-081-00	METAL CHIP	22K	5%	1/10W
R7	1-216-037-00	METAL CHIP	330	5%	1/10W
R8	1-216-037-00	METAL CHIP	330	5%	1/10W
R9	1-216-081-00	METAL CHIP	22K	5%	1/10W
R10	1-216-037-00	METAL CHIP	330	5%	1/10W
R11	1-216-081-00	METAL CHIP	22K	5%	1/10W
R12	1-216-037-00	METAL CHIP	330	5%	1/10W
R13	1-216-037-00	METAL CHIP	330	5%	1/10W
R14	1-216-081-00	METAL CHIP	22K	5%	1/10W
R18	1-216-073-00	METAL CHIP	10K	5%	1/10W
R19	1-216-073-00	METAL CHIP	10K	5%	1/10W
R21	1-216-049-11	METAL CHIP	1K	5%	1/10W
R22	1-216-049-11	METAL CHIP	1K	5%	1/10W
R23	1-216-049-11	METAL CHIP	1K	5%	1/10W
R24	1-216-025-00	METAL CHIP	100	5%	1/10W
R25	1-249-417-11	CARBON	1K	5%	1/4W
R26	1-249-437-11	CARBON	47K	5%	1/4W
R27	1-249-429-11	CARBON	10K	5%	1/4W
R28	1-249-417-11	CARBON	1K	5%	1/4W
R29	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R30	1-216-186-00	METAL CHIP	330	5%	1/8W
R31	1-216-025-00	METAL CHIP	100	5%	1/10W
R32	1-249-425-11	CARBON	4.7K	5%	1/4W
R33	1-249-425-11	CARBON	4.7K	5%	1/4W
R34	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R35	1-216-214-00	METAL CHIP	4.7K	5%	1/8W
R36	1-216-025-00	METAL CHIP	100	5%	1/10W
R37	1-216-073-00	METAL CHIP	10K	5%	1/10W
R38	1-216-089-00	METAL CHIP	47K	5%	1/10W
R39	1-249-429-11	CARBON	10K	5%	1/4W
R42	1-216-073-00	METAL CHIP	10K	5%	1/10W
R43	1-216-042-00	METAL CHIP	510	5%	1/10W
R44	1-216-013-00	METAL CHIP	33	5%	1/10W
R45	1-247-843-11	CARBON	3.3K	5%	1/4W
R46	1-216-073-00	METAL CHIP	10K	5%	1/10W
R47	1-216-097-00	METAL CHIP	100K	5%	1/10W
R48	1-249-417-11	CARBON	1K	5%	1/4W
R49	1-216-049-11	METAL CHIP	1K	5%	1/10W
R50	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R51	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R53	1-249-429-11	CARBON	10K	5%	1/4W
R55	1-216-162-00	METAL CHIP	33	5%	1/8W
R56	1-249-393-11	CARBON	10	5%	1/4W
R91	1-216-295-00	CONDUCTOR, CHIP (2012)			
R92	1-216-073-00	METAL CHIP	10K	5%	1/10W
R99	1-249-399-11	CARBON	33	5%	1/4W
		< VARIABLE RESISTOR >			
RV41	1-238-601-11	RES, ADJ, CARBON	22K		
RV42	1-238-600-11	RES, ADJ, CARBON	10K		

Ref. No.	Part No.	Description			Remark
		< TERMINAL >			
TM1	1-537-488-11	TERMINAL BOARD (ANT) (ANTENNA)			
		< VIBRATOR >			
X21	1-760-549-31	VIBRATOR, CRYSTAL (4.5MHz)			
X41	1-760-220-11	FILTER, CERAMIC (10.7MHz)			
X42	1-527-981-00	FILTER, CERAMIC (450kHz)			
X43	1-577-075-21	OSCILLATOR, CERAMIC (456kHz)			
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*	1-665-909-11	TRANS BOARD **********			
	1-533-217-31	HOLDER, FUSE			
		< CONNECTOR >			
* CN901	1-564-525-11	PLUG, CONNECTOR 10P			
CN903	1-564-321-00	PIN, CONNECTOR 2P			
		< FUSE >			
⚠F901	1-532-388-31	FUSE, TIME LAG (2A 250V) (FR1: AUS)			
⚠F902	1-532-504-31	FUSE, TIME LAG (4A 250V) (FR1: E, SP)			
⚠F902	1-533-310-11	FUSE, GLASS TUBE (6.3A 125V) (F50)			
⚠F903	1-532-505-31	FUSE, TIME LAG (5A 250V) (FR1: AEP, UK, G)			
⚠F903	1-532-506-31	FUSE, TIME LAG (6.3A 250V) (FR1: E, SP)			
⚠F904	1-532-505-31	FUSE, TIME LAG (5A 250V) (FR1: AEP, UK, G)			
⚠F904	1-532-506-31	FUSE, TIME LAG (6.3A 250V) (FR1: E, SP)			
		< RESISTOR >			
⚠R901	1-219-120-11	FUSIBLE	0.15	5%	1/4W F
⚠R902	1-219-120-11	FUSIBLE	0.15	5%	1/4W F
⚠R903	1-219-119-81	FUSIBLE	0.1	5%	1/4W F (F50/F100)
⚠R903	1-219-120-11	FUSIBLE	0.15	5%	1/4W F (FR1)
⚠R904	1-219-119-81	FUSIBLE	0.1	5%	1/4W F (F50/F100)
⚠R904	1-219-120-11	FUSIBLE	0.15	5%	1/4W F (FR1)
⚠R907	1-202-725-00	SOLID	3.3M	10%	1/2W (F50/F100)
		< SWITCH >			
⚠S901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (FR1: E, SP)			
		< TRANSFORMER >			
⚠T901	1-431-348-11	TRANSFORMER, POWER (F100: US)			
⚠T901	1-431-349-11	TRANSFORMER, POWER (F100: CND)			
⚠T901	1-431-350-11	TRANSFORMER, POWER (FR1: E, SP, AUS)			
⚠T901	1-431-351-11	TRANSFORMER, POWER (FR1: AEP, UK, G)			
⚠T901	1-431-352-11	TRANSFORMER, POWER (F50)			
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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
6	1-233-544-11	ENCAPSULATED COMPONENT (F50/F100)	
6	1-233-545-11	ENCAPSULATED COMPONENT (FR1: E, AUS)	
6	1-233-546-11	ENCAPSULATED COMPONENT (FR1: SP)	
7	1-769-971-11	WIRE (FLAT TYPE) (13 CORE) (90mm) (F50/F100/FR1: E, AUS)	
7	1-773-003-11	WIRE (FLAT TYPE) (15 CORE) (90mm) (FR1: AEP, UK, G, SP)	
9	1-773-156-11	WIRE (FLAT TYPE) (21 CORE)	
10	1-769-688-31	WIRE (FLAT TYPE) (11 CORE)	
71	1-773-011-11	WIRE (FLAT TYPE) (15 CORE) (170mm) (EXCEPT FR1: SP)	
71	1-773-116-11	WIRE (FLAT TYPE) (19 CORE) (FR1: SP)	
110	1-782-558-21	WIRE (FLAT TYPE) (280mm) (16 CORE) (F100/FR1)	
110	1-782-560-21	WIRE (FLAT TYPE) (10 CORE) (F50)	
111	1-782-559-21	WIRE (FLAT TYPE) (9 CORE)	
⚠114	1-575-651-11	CORD, POWER (AEP, G, SP)	
⚠114	1-575-653-11	CORD, POWER (E)	
⚠114	1-690-608-11	CORD, POWER (AUS)	
⚠114	1-690-609-21	CORD, POWER (US, CND)	
⚠114	1-751-529-11	CORD, POWER (UK)	
⚠115	1-569-008-11	ADAPTOR, CONVERSION 2P (SP)	
322	1-777-874-11	WIRE (FLAT TYPE) (16 CORE) (75mm)	
⚠401	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
FAN101	1-698-792-11	FAN, DC (F100/FR1)	
HP101	1-500-093-11	HEAD, MAGNETIC (PLAYBACK)	
HRPE101	1-500-094-11	HEAD, MAGNETIC (REC/PB/ERASE)	
M1	A-2004-409-A	MOTOR ASSY, CAPSTAN	
M2	A-2004-410-A	MOTOR ASSY, DC (TRIGGER)	
M101	X-2646-110-1	T, T CHASSIS ASSY (MG) (F) (SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB) (RP) (SLED)	
M61	X-4948-434-1	MOTOR ASSY (LOADING)	
M62	X-4948-434-1	MOTOR ASSY (TABLE)	
⚠T901	1-431-348-11	TRANSFORMER, POWER (F100: US)	
⚠T901	1-431-349-11	TRANSFORMER, POWER (F100: CND)	
⚠T901	1-431-350-11	TRANSFORMER, POWER (FR1: E, SP, AUS)	
⚠T901	1-431-351-11	TRANSFORMER, POWER (FR1: AEP, UK, G)	
⚠T901	1-431-352-11	TRANSFORMER, POWER (F50: US, CND)	

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Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#2	7-685-872-09	SCREW +BVTT 3X8 (S)	
#3	7-685-871-01	SCREW +BVTT 3X6 (S)	
#4	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#5	7-685-873-09	SCREW +BVTT 3X10 (S)	
#6	7-685-875-09	SCREW +BVTT 3X14 (S)	
#7	7-685-862-09	SCREW +BVTT 2.6X6 (S)	
#8	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#9	7-685-131-19	SCREW +BTP 2.6X4 TYPE2 N-S	
#10	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#11	7-621-775-10	SCREW +B 2.6X4	
#12	7-623-921-01	RING, RETAINING, CAPSTAN	
#13	7-621-775-00	SCREW +B 2.6X3	
#14	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S	
#15	7-685-107-11	SCREW +P 2X12 TYPE2 NON-SLIT	
#16	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	
#17	7-685-134-19	SCREW +PTPWH 2.6X8 (TYPE2)	
#18	7-621-772-20	SCREW +B 2X5	
#19	7-621-255-15	SCREW +P 2X3	
#20	7-621-770-67	SCREW +PWH 2.6X6	

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MEMO

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	1997.05	New
	1998.08	Correction-1
1.1	2005.02	Change of page 5 to 24 in GENERAL
		Incorporation of Correction-1

SS-F50/F100

SERVICE MANUAL

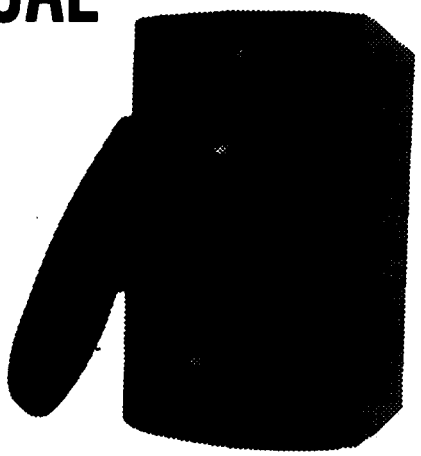


Photo : SS-F50

US Model
Canadian Model
SS-F50/F100

AEP Model
UK Model
E Model
SS-F100

These are speaker systems in MHC-F50, MHC-F100 and MHC-FR1.

SPECIFICATIONS

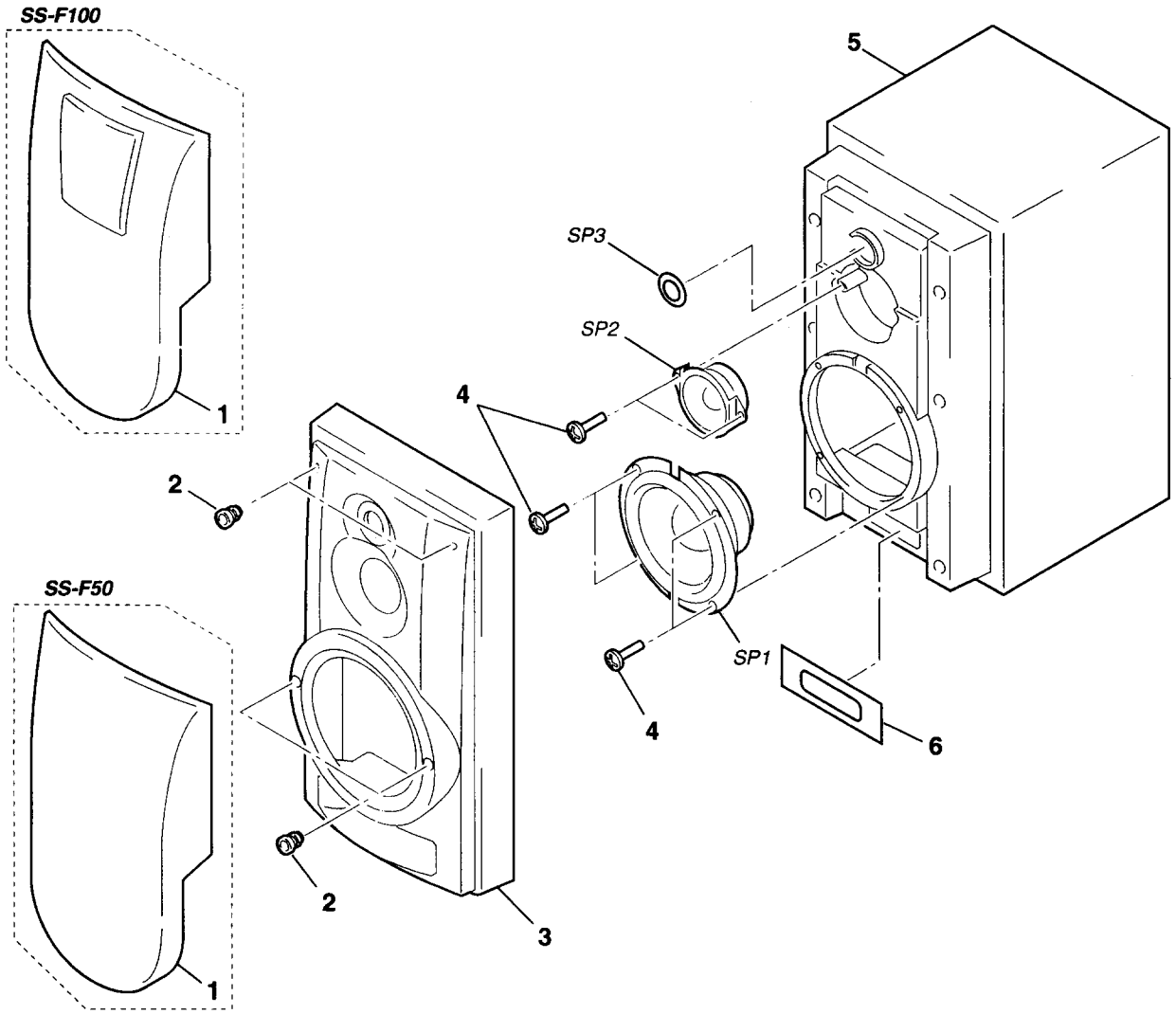
Speaker system	3-way, bass-reflex type
Speaker units	Woofer : 16 cm, cone type
	Tweeter : 5 cm, cone type
	Super tweeter : 2 cm, dome type
Nominal impedance	8 ohms (SS-F100)
	6 ohms (SS-F50)
Dimensions	Approx. 215 x 375 x 285 mm
	incl. projecting parts and controls
Mass	Approx. 4.5 kg
	net per speaker

Design and specifications are subject to change without notice.

SPEAKER SYSTEM

MICROFILM

SONY®


SS-F100
1
SS-F50
1
2
2
3
4
4
5
6
SP1
SP2
SP3